International Principles for Responsible Shrimp Farming

Section I: Background and Purpose

Introduction

Aquaculture production as well as trade in aquaculture products has grown significantly in recent years, responding to increased demand for aquatic products. Aquaculture production reached 55 million tonnes in 2003, with a farm gate value of $57 billion. Developing countries dominate aquaculture production and trade, contributing over 80% of production and 50% to the value of internationally traded aquatic products. Aquaculture now contributes significantly to the global seafood trade as well as to domestic consumption, and is expected to increase significantly due to stagnating supplies from wild capture fisheries.

With increasing volume of production, trade and consumption there is a concurrent and increasing demand for improved sustainability, social acceptability, and human health safety from the sector. This is not only affecting the international trading environment and pressurizing the producers to focus on their production methods in order to address those concerns, but it is also requiring the producing countries to develop and implement adequate and appropriate policies that provide a conducive environment for responsible production and trade. To achieve these objectives, the Food and the Agriculture Organization of United Nations (FAO) took a leading role by developing the Code of Conducts (CoC) for responsible fisheries.

Shrimp farming has been one of the fastest growing aquaculture sectors. This rapid growth has come at a cost. Sensitive wetland habitats such as mangrove areas were destroyed to leave space to the rapidly expanding farming areas. This rapid growth also impacted other land users. Most notable was the impact on the agriculture sector, which was affected by salination of the land. Environmental pollution, often caused by overcrowding of ponds and poor management, severely affected not only the surrounding environment but also initiated a self-pollution process that led to the abandonment of large farming areas. As a consequence, degradation of the pond environment caused an increase in health problems, which triggered crop losses and increased use of chemicals. A large number of treatments have been used by farmers worldwide, and some of these substances have been banned by importing countries for the prospects of food safety. In addition, consumers were alarmed and prices were lowered as a consequence of rejected or destroyed batches.

Due to the strong global interest in shrimp farming and the issues that have arisen from its development, a Consortium Program involving the World Bank, the Network of Aquaculture Centres in Asia-Pacific (NACA), the World Wildlife Fund (WWF), and the Food and Agriculture Organization of the United Nations (FAO) was initiated in 1999 to analyze and share experiences on the environmental and social impacts, and management of sustainable shrimp farming. The development of the work program for the Consortium benefited from recommendations of the FAO Bangkok Technical Consultation on Policies for Sustainable Shrimp Culture (FAO, 1998), a World Bank review on Shrimp Farming and the Environment (World Bank, 1998) and an April 1999 meeting on shrimp aquaculture management practices hosted by NACA and WWF in Bangkok, Thailand. The consultation activities towards developing of *International Principles for Responsible Shrimp Farming* continued with involving wide range of stakeholders at the international workshop hosted by the government of China, co-organized by FAO and NACA (Beijing, 15-16 November 2004) and at the World Aquaculture Society (WAS) Conference hosted by the Government of Indonesia (Bali, 9-13 May 2005).

The objectives of the Consortium program were to: (a) generate a better understanding of the key issues involved in sustainable shrimp aquaculture; (b) encourage debate and discussion around these key issues to lead to consensus among stakeholders; (c) identify better management practices for shrimp aquaculture; (d) evaluate the cost for adoption of such strategies and other potential barriers to their adoption; (e) create a framework to review and evaluate successes and failures which can inform policy debate on better management for sustainable shrimp aquaculture; and (f) identify future development activities and assistance required for the implementation of a more sustainable shrimp culture industry (World Bank, NACA, WWF and FAO, 2002). The Consortium program supported complementary case studies on various aspects of shrimp aquaculture, providing wide geographical coverage of major shrimp producing countries in Asia, Latin America, and Africa, as well as studies and thematic global reviews. The case studies documented and analyzed global experiences in management of shrimp aquaculture, identified key environmental and social issues, and highlighted examples of better management practices with potential to be applied to enhance the positive social and economic impacts of shrimp farming and reduce any negative social and environmental impacts.

Purpose

The outcome of the Consortium program, together other consultations and experiences, have been synthesized into these *International Principles for Responsible Shrimp Farming.* The principles presented here address the technical, environmental, social and economic issues associated with shrimp farming and provide a basis for development and implementation of industry practices and government policies to guide overall sustainability of shrimp farming at national, regional

and global levels.

These *International Principles* provide specific guidance in implementing the FAO Code of Conduct for Responsible Fisheries in the shrimp aquaculture sector, as recommended by the FAO Sub-Committee on Aquaculture of the Committee on Fisheries that recommended a set of *International Principles* to be developed and widely promoted to support sustainable development of aquaculture, with a priority to the shrimp farming requiring improved management.

The *International Principles* presented here have been developed over a period of five years with significant inputs from stakeholders through a series of consultative meetings and workshops. The principles have also been made available to the general public for comments through the Internet and will be continued until they are finalized and presented to the NACA Governing Council and the FAO Committee on Fisheries, Sub-Committee on Aquaculture (COFI-AQ), the mandated global inter-governmental forum, for approval and agreement in mid to late 2006.

These *International Principles* provide the basis upon which stakeholders can collaborate for a more sustainable development of the sector. For governments, they provides a basis for policy, administration and legal frameworks, that can be renewed (or formulated where there are none), adjusted, funded and implemented to address the specific characteristics and needs of the sector in order to protect (and enhance) the industry, the environment, other resource users and consumers. Typically, existing legislation and guidelines have been modified from those suitable for other industries and are not applicable to aquaculture. It is also crucial to strengthen institutional arrangements, capacity and partnerships (consultative frameworks) to ensure the cooperation and coordination of all relevant institutions with jurisdiction over natural resources, animal and public health. The *International Principles* could also provide the basis for development of certification standards and systems.

The *International Principles* presented here should be supported by other documents and educational and extension programs and other initiatives to ensure their implementation at the farm level. The final section of the document gives examples of the responsibilities and options for their implementation. Some available guidance documents and references to other relevant materials are also provided. Annexes on terminology and guidance on better management practice are also provided.

Section II: International Principles for Responsible Shrimp Farming

Principle 1: Locate shrimp farms according to national planning and legal frameworks in environmentally suitable locations, making efficient use of land and water resources and in ways that conserve biodiversity, ecologically sensitive habitats and ecosystem functions, recognizing that other land use, people and species depend upon these same ecosystems.

Justification: *It is clear from substantial worldwide experience that inappropriate and unplanned siting of shrimp farms has resulted in production failures, environmental degradation, land use conflicts and social injustice. Thus, it is imperative that, during establishing shrimp farms, due consideration is given to the environment, critical habitats, other land use in the vicinity, and the sustainability of the shrimp farming operations themselves.*

Specific criteria:

- Build new shrimp farms above the inter-tidal zone
- Ensure no net loss of mangroves or other sensitive wetland habitats
- Do not locate farms on sandy soils or other areas where seepage or discharge of salt water may affect agricultural land or freshwater supplies
- Do not locate new farms in areas that have already reached the carrying capacity
- Retain buffer zones and habitat corridors between farms and other users and habitats
- Farm location should obey land use and other planning laws and coastal management plans
- Improve existing shrimp farms in inter-tidal and mangrove areas through mangrove restoration, retiring unproductive ponds and intensifying remaining farm areas above the inter-tidal zone.

Principle 2: Design and construct shrimp farms in ways that minimize environmental damage.

Justification: *With the increasing intensity and expansion of shrimp farming operations evident in recent years, suitable design and construction techniques should be used when establishing new shrimp farms. Advantage should be taken of improved techniques for designing and constructing farms that take into account not only the requirements of the cultured shrimp and the management of the farm, but also integrate the farm into the local environment whilst causing the minimum possible disturbance to the surrounding ecosystems.*

Specific Criteria**:**

- Incorporate buffer areas and techniques and engineering practices that minimize erosion and salinisation during construction and operation
- Minimize disturbance of acid-sulfate soils during construction and operation
- Conserve biodiversity and encourage re-establishment of natural habitats in farm design
- Minimize creation of degraded areas such as unused soil piles and borrow pits
- Design dykes, canals and infrastructure in ways that do not adversely affect hydrology
- Separate effluent discharge points from inlet canal to reduce self pollution and maintain biosecurity

Principle 3: Minimise the impact of water use for shrimp farming on water resources.

Justification: *Minimizing the use of new water is an essential part of modern, environmentally responsible shrimp farming. Reducing water exchange benefits the farmer by lowering pumping costs and reducing the chance of introducing toxic compounds, diseases, disease vectors or competitors into the farm. It also benefits the environment by reducing the discharge of nutrients and organic matter from the farms and by reducing the utilization of precious freshwater resources. Recent innovations have shown that proper management protocols can reduce water exchange requirements, even in highly intensive systems, with no loss in shrimp performance. This has benefits for all parties and should be encouraged at all levels.*

Specific criteria:

- Do not use fresh groundwater for salinity control
- Use water efficiently through minimizing water abstraction
- Minimize discharge of farm effluents and sediment to the environment
- Aim to return water with lower concentrations of nutrients, organic matter and solids to the ecosystem than that taken out
- Incorporate settlement and sedimentation ponds into the water inlet and outlet designs
- Manage water quality to maintain suitable water quality conditions in the growout pond
- Obey national laws and guidelines on water use and effluent discharge

Principle 4: Where possible, use domesticated selected stocks of disease free and/or resistant shrimp broodstock and post-larvae to enhance biosecurity, reduce disease incidence and increase production, whilst reducing the demand for wild stocks.

Justification: *Recent trends in shrimp farming have seen a change towards the use of domesticated stocks of genetically improved animals, following the current agricultural paradigm. Elimination of the need to source broodstock and/or post-larvae from the wild has allowed the industry to develop successful programmes for the enhancement of their shrimp stocks, in terms of both their reproductive and production characteristics. It has also lead to the development of disease free and disease resistant stocks, which are currently available for a number of species. Concomitantly, these developments have lead to reduced demands for wild stocks and hence reductions in unwanted by-catch and habitat losses involved with their collection. However, further work is required to achieve these advances for all currently cultured species, and problems with transboundary movements of non-indigenous species has brought new threats of disease transmission and biodiversity reduction, which must be addressed.*

Specific criteria:

- Avoid potential negative impacts on local biodiversity
- Preference to local, indigenous species
- Avoid use of wild caught post-larvae
- Adopt on-farm quarantine and biosecurity measures to reduce disease incidence
- Use domesticated stocks wherever possible
- Stock good quality postlarvae to improve chances of successful harvest
- Comply with national, regional and international criteria controlling the movement and quarantine of animals

Principle 5: Utilize feeds and feed management practices that make efficient use of available feed resources, promote efficient shrimp growth, minimize production and discharge of waste nutrients

Justification: *Control and rationalization of feeds and feeding in modern shrimp farming is of critical importance in maintaining a cost-effective and environmentally sound industry. This is due to many factors including: Feeds and feeding account for 50-60% of the operational costs of semi- and intensive shrimp farming. Wasted (uneaten and unmetabolized) feed is also a major contributor to the discharge of nutrients and organic*

matter from shrimp farms leading to eutrophication of the environment. Increasing concern is also being expressed regarding the wasteful use of increasingly scarce resources of fishmeal going into shrimp diets for a net loss of protein resources and allied losses due to by-catch from the fishmeal industry. Formulation of cost-efficient and high quality, low polluting diets, and proper management of the feeding regime are thus crucial in attempting to optimize the efficient use of feeds in shrimp farming.

Specific criteria:

- Use good quality formulated feeds containing less fish meal and lower level of protein
- Make efficient use of resources
- Minimize feed wastage

Principle 6: Health management plans should be adopted that aim to reduce stress, minimize the risks of disease affecting both the cultured and wild stocks, and increase food safety.

Justification: *Maintenance of the health of shrimp stocks in farming situations should focus on maintenance of a healthy environment in the ponds at all phases of the culture cycle in order to prevent problems in the ponds before they occur and reduce the likelihood of disease transmission outside the farms. Attempting to limit the introduction of diseases through use of disease free stocks, thorough preparation of the ponds before stocking, maintenance of optimal environmental conditions through management of stocking densities, aeration, feeding, water exchange and phytoplankton bloom control etc., routine monitoring and recording of shrimp health to detect any developing problems, and maintenance of biosecurity in quarantining and treating any diseased ponds are all critical elements in any health management plan.*

Specific criteria:

- Implement health management protocols that are aimed at reducing stress and focus on disease prevention rather than treatment
- Maintain biosecurity and minimize disease transmission between broodstock, hatchery and growout
- Implement management strategies to avoid spreading shrimp diseases within and from the farm
- Improve the capacity of health and disease control among farmers and supporting agencies

- Ensure rational and responsible use of veterinary drugs and minimize the use of (only) approved antibiotics

Principle 7: Ensure food safety and the quality of shrimp products, whilst reducing the risks to ecosystems and human health from chemical use.

Justification: *Increasing focus is being placed on the safety of foods being consumed in the worlds' markets. These concerns include not only ensuring that foods for human consumption are free from excesses of harmful or undesirable chemicals, but also that the workers producing these foods and the environment surrounding the production facility have been protected from negative effects of the use of these chemicals. Increasing calls for total traceability of food products are also affecting the food production industry such that consumers can be assured that the product has been produced without the use of transgenic technologies, without addition of undesirable or harmful chemicals or additives, and that all of the environments and ecosystems affected by the production facilities has not been compromised in any way.*

Specific criteria:

- Zero use of banned drugs and chemicals
- Appropriate use of permitted veterinary drugs and chemicals
- Train farm staff in safe handling and use of drugs and chemicals
- Apply quality control for healthful and clean products
- Harvest, handle and transport shrimp produced in sanitary manner

Principle 8: Develop and operate farms in a socially responsible way that benefits the farm, the local communities and the country, and that contributes effectively to rural development, and particularly poverty alleviation in coastal areas, without compromising the environment.

Justification: *There are increasing demands for products which are not only environmentally friendly (that have been produced through the adoption of environmentally sustainable practices), but that have been produced by employees who were treated fairly, and that the enterprise that produced the product is a respected and active component of the society. It should be the responsibility of a civilized society that the benefits derived from shrimp farming are shared equitably.*

Specific criteria:

- Minimize conflicts with local communities that may result from farm development

and operation and ensure that the project is mutually beneficial

- Ensure benefits of shrimp culture accrue to the wider community
- Ensure worker welfare
- Minimize risks to smallholders
- Train farmers and staff in responsible shrimp farming practices and safe handling of drugs and chemicals
- Apply effective quality control system

Section III: Implementation

The *International Principles for Responsible Shrimp Farming* represent a set of principles that can be used by industry, governments and other stakeholders to promote and support the development of more responsible shrimp farming. The responsibilities for their implementation are with a wide number of stakeholders.

1. Role of the Private Sector

Implementation of the *International principle* is the main responsibility of the private sector.

Implementation should be supported through regular communication within the sector and with other stakeholders. Private sector should not only comply with the authorities and their policies but also should participate to the development of such activities.

State and private sector investment is essential to foster the development of innovative and appropriate technologies that improve environmental performance.

Private sector investment in technology development should be supported by government investment, especially in areas such as: capacity building, institutional development, sharing of information and experience, monitoring and control of disease and water quality issues, and incentives that promote environmentally responsible development. Both the state and private sectors should collaborate in multidisciplinary research, development and extension efforts that link research to the needs of the industry and improve environmental performance.

2. Role of Government

The responsibilities of government to support implementation are highlighted as follows:

- **Development of legal frame work**

Develop and implement an integrated coastal aquaculture development policy that takes into account both socio-economic objectives and the need for environmental sustainability.

Countries should develop and regularly update national coastal aquaculture development strategies and plans that promote ecologically sustainable development, equitable sharing of benefits and rational use of natural resources shared by aquaculture and other coastal activities. National aquaculture development plans should identify where coastal aquaculture should be developed, how the development will take place, and the intensity, time frame and resources required. Consideration should be given to the possible negative consequences of such development and plans made for their mitigation. Coastal aquaculture policies should authorize and enable strong collaboration between government, industry and local communities.

Appropriate legal and administrative frameworks should be developed and/or implemented to facilitate responsible coastal aquaculture development.

In support of defined policies, countries should develop practical and enforceable legal arrangements and establish appropriate administrative frameworks. Governments must efficiently oversee the planning and authorization of aquaculture operations through mechanisms such as permits or licenses, environmental impact assessments and by providing adequate guidance to the industry. A variety of planning and management tools and economic instruments should be utilized to encourage the industry to select options that promote efficient and sustainable use of resources, environmental performance and social equity. Consultation with relevant stakeholders is important to ensure that the intended provisions are understood and that the stakeholders have a role in implementation and control, thus facilitating enforcement.

Coastal aquaculture development should occur within broader integrated management frameworks and integrated coastal zone and river basin management.

Integration of coastal aquaculture development into planning and management of other key coastal sectors (e.g. tourism, fisheries, housing, agriculture) and into rural development is necessary to ensure that aquaculture development is within the local and regional carrying

capacity and that conflicts with other users are minimized. Approaches such as ICZM and integrated river basin management provide a framework for such integration and enhance the understanding that aquaculture is an integral part of coastal development - having an impact on the entire coastal environment, and cannot occur in isolation.

States should establish effective environmental impact assessment (EIA) procedures specific to coastal aquaculture at appropriate levels.

Strategic and project level environmental impact assessments enable the integration of environmental, social, technical and economic considerations during the planning and decision making processes for allocation of land, water and other natural resources and the operation of coastal aquaculture facilities. Project level EIA procedures require early discussions among the project proponents, the regulatory agencies and the stakeholders, and allow the evaluation of alternative sites, designs and management measures before the resources are committed. Strategic or sector level environmental assessment is essential for management of the cumulative impacts of a number of small farms. An environmental management plan (EMP) that defines the impact of mitigation measures to be adopted during construction and operation, and a monitoring plan are central components of EIA.

Land use zoning should be adopted to provide an effective mechanism to minimise physical alteration and degradation of coastal habitats as well as socio-economic conflicts that arise from ill-conceived siting of development.

Siting of coastal aquaculture operations must take into account the sustainability of ecological functions, environmental capacity, as well as technical, managerial and social considerations. Adverse impacts of aquaculture activities on coastal habitats and resources, the spread of diseases, and the impact of farm effluents (nutrients, solids and chemicals) can be minimized and farm production enhanced by well-conceived site selection. Land use zoning directed towards maintenance of the primary functions of the local environment can allow multiple uses of land to accommodate competing demands and activities and limit cumulative impacts.

Innovative approaches should be adopted during the design, construction and operational phases in order to limit environmental impacts.

Improved planning and management practices during the design, location, construction and operational phases should be adopted in order to significantly increase environmental performance, and to help achieve a balance between high production and environmental

integrity. Particular attention should be placed on limiting physical alterations, maintenance of existing mangrove forests, prevention of soil salinization, use of efficient systems of water management and discharge of effluents, adherence to effluent standards, minimizing undesirable levels of chemicals, nutrients and sedimentation and preventing the introduction of non-indigenous species or genes. The environmental management plan (EMP) prepared within the framework of the EIA should be adhered to.

- **Enhancement of institutional capacity**

Institutional capacity to define and implement policy and regulatory provisions should be enhanced.

Whilst there is a clear need for improving government oversight of coastal aquaculture development, strengthening institutional capacity, targeting both the public and the private sector is crucial. The capacity for education and training, research and technology development, planning (e.g., EIA, land use zoning), extension and enforcement need to be enhanced. Mechanisms for sharing of information on policies, legislation and best practices should be developed and/or implemented in order to promote optimum use of financial, human and information resources.

- **Development of implementation system**

Sustained monitoring programmes at national and farm level should be instigated.

A broad range of monitoring activities is required to provide information to help control and improve coastal aquaculture operations, environmental mitigation measures adopted at farm level and the national policy in general. These include monitoring the health and disease status of the stock at every phase of the life cycle (and complying with agreed OIE regulations where applicable), the water quality both within farm and on discharge, any chemical, antibiotic or pathogen residuals in the harvested shrimp to ensure international seafood standards are met, and all other inputs to the farm to ensure use of permitted and suitable ingredients and supplies. A practical and effective monitoring plan is an integral component of the operational procedures and will enable the monitoring of pre-defined outcome and process indicators. Under the plan, other coastal resource users should also be monitored. It is equally important to pre-determine management responses (in the event of significant deviations from predicted levels), reporting and evaluation procedures. Involvement of all stakeholders in the monitoring programme will encourage and ensure

shared responsibility for meeting the objectives of the monitoring plan.

Farms should be registered and certified in line with national and international standards to encourage the use of best management practices, traceability and environmentally-friendly operations.

Registration and certification of aquaculture production units in line with existing national or international standards is required to maintain quality controls over production, promote best management practices, ensure traceability and promote environmentally-compatible operations. Advantage should be taken of the already existing certification initiatives at many levels which are aimed at controlling and monitoring the development of sustainable shrimp farms which are then able to efficiently and consistently produce high quality products for sale to local and international markets.

Role of Regional and International Cooperation

Enhanced regional and inter-regional co-operation should be promoted to help achieve environmentally sustainable coastal aquaculture development.

Regional and inter-regional organizations that promote aquaculture and those that deal with the protection of coastal and marine environments offer the opportunity to improve the environmental performance of the aquaculture industry. These organizations must give priority to transfer and adoption of technological innovations, capacity building - including sharing of knowledge and experiences, generating 'best management practice' guidelines and codes of conduct, and facilitating co-operation at regional and global level.

Annexes

Annex A: References

- FAO 1998. Report of the Bangkok FAO Technical Consultation on Policies for Sustainable Shrimp Culture. Bangkok, Thailand, 8-11 December 1997. FAO Fisheries Report No. 572. Rome. 31p.

- World Bank. 1998. Report on Shrimp Farming and the Environment – Can Shrimp Farming be Undertaken Sustainability? A Discussion Paper designed to assist in the development of Sustainable Shrimp Aquaculture.

- World Bank, NACA, WWF and FAO. 2002. Shrimp Farming and the Environment. A World Bank, NACA, WWF and FAO Consortium Program "To analyze and share experiences on the better management of shrimp aquaculture in coastal areas". Synthesis report. Work in Progress for Public Discussion. Published by the Consortium. 126 pages (available at www.enaca.org/shrimp).

Annex B: Terminology

Term	***Examples/references***
Principles: the philosophical basis for production of the product, intended to guide producers towards sustainable production. Principles form the basis for more specific criteria or standards.	Code of Conduct (CoC) and Code of Practice (CoP) listed below
Code of Conduct (CoC): is usually an "overarching document" comprising a set of principles and criteria that may be used as the basis for certification.	▪ The FAO Code of Conduct for Responsible Fisheries (CCRF) (www.fao.org/fi) ▪ Federation of European Aquaculture Producers (FEAP) (http://www.feap.org/) ▪ Australian aquaculture Code of Conduct (http://www.pir.sa.gov.au/pages/aquaculture/farm_practice/code_of_conduct.pdf) ▪ Thailand Code of Conduct for shrimp farming: (www.thaiqualityshrimp.com) ▪ Bangladesh Codes of Conduct for shrimp

	(http://www.enaca.org/modules/mydownloads/viewcat.php?cid=101)
Code of Practice (CoP): are usually "lower level" documents that provide guidance on management or other practices to be adopted in implementing the principles of the Codes of Conduct.	▪ Global Aquaculture Alliance "Codes of Practice for Responsible Shrimp Farming." www.gaalliance.org. ▪ ICES Code of Practice on the Introductions and Transfers of Aquatic Organisms http://www.ices.dk/reports/general/2003/Codemarineintroductions2003.pdf ▪ Malaysia has developed codes of practice for shrimp http://agrolink.moa.my/dof/Utama/splam/sijil_ladang_bi.htm#Farm ▪ Codes of Practice and guidance for Scottish salmon farming http://www.scottishsalmon.co.uk/codesofpractice/index.html
Standards: a rule, regulation, or procedure specifying characteristics that must be met by a product. More and more, standards are expressed as measurements that can be used to show overall performance (results) toward achieving specific principles and criteria. Standards are used to assess the level of performance to measure whether a product can be certified.	▪ Many standards issued for aquaculture. GAA standards http://www.aquaculturecertification.org/accst-7.html ▪ Draft organic standards for aquaculture may be found http://www.certifiedorganic.bc.ca/rcbtoa/services/organic-aquaculture-standards.html http://www.soilassociation.org/web/sa/saweb.nsf/0/87f4f4f9e592f32e80256e2f0050cad9?OpenDocument www.enaca.org/shrimp
Better management practice (BMP): management principles for aquaculture development. The term "better" is preferred rather than "best" because aquaculture practices are continually improving (today's 'best' is tomorrows 'norm')	▪ BMPs for shrimp farming: www.enaca.org/shrimp
Good Aquaculture Practice (GAP): farm management practices guidelines prepared to minimize the potential for farm-raised fishery products to be contaminated with pathogens, chemicals, filth, and unapproved	▪ US FDA GAP studies: www.foodsafetymagazine.com/issues/0306/colask0306.htm ▪ Thailand GAP program for farmed shrimp: http://www.thaiqualityshrimp.com/eng/standard/link2

or misused animal drugs. Good aquaculture practices can be defined as those practices necessary to produce high-quality products conforming to food safety requirements.	.asp ▪ Malaysia GAP program (based on a COP) http://agrolink.moa.my/dof/Utama/splam/sijil_ladang_bi.htm#Farm
Guidance/technical guidelines: documents that provide (technical) guidance on implementation of Codes of Conduct, Codes of Practice, certification principles, criteria and standards (similar to guidelines).	▪ FAO technical guidance for Aquaculture ftp://ftp.fao.org/docrep/fao/003/W4493e/W4493e00.pdf ▪ FAO/NACA Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals and the Beijing Consensus and Implementation Strategy. http://www.fao.org/DOCREP/005/X8485E/x8485e02.htm ▪ Guidelines for shrimp farming in Thailand www.thaiqualityshrimp.com
Manuals: More technical documents usually providing very practical advice on implementation of the above documents.	▪ Shrimp Health Management Extension Manual http://www.enaca.org/modules/mydownloads/singlefile.php?cid=23&lid=58 ASEAN: Manual on Good Shrimp Farm Management Practice. http://www.enaca.org/modules/mydownloads/visit.php?cid=74&lid=131
Hazard analysis and critical control point (HACCP): A HACCP plan is a document describing the activities developed in accordance with the principles of HACCP to ensure control of hazards which are significant for food safety in the product under consideration and its intended use.	▪ WHO listed HACCP: http://www.who.int/foodsafety/publications/fs_management/en/aquaculture.pdf