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RESPONSIBLE FISHERIES

5

Suppl. 7

# AQUACULTURE DEVELOPMENT

## 7. Aquaculture governance and sector development





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## PREPARATION OF THIS DOCUMENT

**T**hese technical guidelines were finalized by the Fisheries and Aquaculture Department of the Food and Agriculture Organization of the United Nations (FAO).

**T**he document was drafted by Pierre Murekezi and Nathanael Hishamunda, on the basis of inputs provided by several experts inside and outside FAO, including consultants Elisabetta Martone, Neil Ridler and Pedro Bueno. Our particular thanks go to FAO staff members Jose Aguilar-Manjarrez, Malcolm Beveridge and Lionel Dabbadie for their invaluable comments. The production of these guidelines has been funded and supported by the NEPAD-FAO Fish Programme (NFFP).

**I**nitial discussions leading to the preparation of these guidelines took place during the fourth session of the FAO Committee on Fisheries (COFI) Sub-Committee on Aquaculture, which was held in Puerto Varas, Chile, from 6 to 10 October 2008. The Sub-Committee emphasized that good governance is key to the continued sustainable development of aquaculture. Three FAO fisheries and aquaculture technical papers were recently published on this topic, namely: “Policy and governance in aquaculture: lessons learned and way forward”; “Improving governance in aquaculture employment: a global assessment”; and “Aquaculture planning: policy formulation and implementation for sustainable development”. These, together with the outline proposed for the FAO technical guidelines on Improving Planning, Policy Formulation and Implementation for Aquaculture Development, constitute the backbone of these guidelines.

**T**hese guidelines have no formal legal status. They are intended to provide support for the implementation of the Code of Conduct for Responsible Fisheries (CCRF), especially of Article 9, which concerns aquaculture development. Furthermore, in order to cover all the complex and diverse aspects of aquaculture governance, the wording and structure of these Guidelines does not follow the language and structure of the Code strictly. Any eventual differences in the terminology employed

should not be understood as an intentional reinterpretation of the Code. Furthermore, because the guidelines are flexible and subject to change as circumstances evolve, or as new information becomes available, they may be further revised and complemented by other guidelines, notes, or any other instrument, as and when circumstances so require.

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*Aquaculture development. 7. Aquaculture governance and sector development.* FAO Technical Guidelines for Responsible Fisheries. No. 5. Suppl. 7. Rome, Italy. 50 pp.

## ABSTRACT

Aquaculture governance is the set of processes by which a jurisdiction manages its resources with respect to aquaculture, how its stakeholders participate in making and implementing decisions affecting the sector, how government personnel are accountable to the aquaculture community and other stakeholders, and how the respect of the rule of law is applied and enforced.

Good governance of aquaculture is a necessary condition for the sector to fully realize its potential for growth. Good governance will also ensure the order and sustainability of this growth.

The present technical guidelines on “aquaculture governance and sector development” have been produced to support the implementation of Article 9 of the Code of Conduct for Responsible Fisheries on aquaculture development. In addition to principles of good aquaculture governance (effectiveness and efficiency, equity, accountability and predictability of the law), these technical guidelines include suggestions/recommendations for the aquaculture sector; its administration, its legal and regulatory framework, licence policies and non-state participation in decision-making and implementation.

The guidelines are to be interpreted and applied in their entirety in a manner consistent with national laws and regulations and, where applicable, international agreements. They are for use by government and non-government agencies responsible for aquaculture, and producer associations at the sub-national, national and regional levels.

The objective of these guidelines is to assist policy makers and other stakeholders in the establishment and implementation of good governance in aquaculture by producing a blueprint of practices that can be tailored to suit particular administrative, cultural and legal environments. Such good governance practices could be adapted to any jurisdiction wishing to enhance aquaculture sustainability.





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## ACRONYMS AND ABBREVIATIONS

<b>ANA</b>	Agence nationale de l'aquaculture (National Aquaculture Agency)
<b>ANDA</b>	Agence Nationale pour le Développement de l'Aquaculture (Morocco's National Agency for the Development of Aquaculture)
<b>CCRF</b>	Code of Conduct for Responsible Fisheries (of the FAO)
<b>COFI</b>	Committee on Fisheries (of the FAO)
<b>DIGEPESCA</b>	Dirección General de Pesca y Acuicultura (General Directorate for Fisheries and Aquaculture)
<b>ESCAP</b>	Economic and Social Commission for Asia and the Pacific
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>ICZM</b>	Integrated Coastal Zone Management
<b>INAQUA</b>	Instituto Nacional de Desenvolvimento de Aquacultura (National Institute for Aquaculture Development)
<b>INCOPESCA</b>	Instituto Costarricense de Pesca y Acuicultura (Costa Rican Institute for Fisheries and Aquaculture)
<b>SDG</b>	Sustainable Development Goal
<b>NACA</b>	Network of Aquaculture Centres in Asia and the Pacific
<b>NFFP</b>	NEPAD-FAO Fish Programme
<b>OPESCA</b>	Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (Central American Organization of the Fisheries and Aquaculture Sector)
<b>SWOT</b>	Strengths, Weaknesses, Opportunities and Threats
<b>UNDP</b>	United Nations Development Programme

## BACKGROUND

1. From ancient times, fishing from oceans, lakes and rivers has been a major source of food, a provider of employment and other economic benefits for humanity. Ocean productivity seemed particularly unlimited. However, with increased knowledge and the dynamic development of fisheries and aquaculture, it was realized that living aquatic resources, although renewable, are not infinite and need to be properly managed, if their contribution to the nutritional, economic and social well-being of the growing world's population was to be sustained.

2. However, for nearly three decades, because of the dramatic increase of pollution, abusive fishing techniques worldwide, and illegal, unreported and unregulated fishing, catches and landings have been shrinking and fish stocks declining, often at alarming rates.

3. Stock depletion has negative implications for food security and economic development and reduces social welfare in countries around the world, especially those relying on fish as their main source of animal protein and income such as subsistence fishers in developing countries. Living aquatic resources need to be properly managed, if their benefits to society are to be sustainable.

4. Sustainability of societal benefits requires a recovery of depleted stocks and maintenance of the still-healthy ones, through sound management. In this regard, the adoption of the United Nations Convention on the Law of the Sea, in 1982 was instrumental. The law provides a new framework for the better management of marine resources. The new legal regime of the oceans gave coastal States rights and responsibilities for the management and use of fishery resources within the areas of their national jurisdiction, which embrace some 90 percent of the world's marine fisheries.

5. In recent years, world fisheries have become dynamically developing sectors of the food industry, and many States have

striven to take advantage of their new opportunities by investing in modern fishing fleets and processing factories in response to growing international demand for fish and fishery products. It became clear, however, that many fisheries resources could not sustain an often uncontrolled increase of exploitation. Overexploitation of important fish stocks, modifications of ecosystems, significant economic losses, and international conflicts on management and fish trade still threaten the long-term sustainability of fisheries and the contribution of fisheries to food supply.

6. In light of this situation, while recognizing that the recovery of depleted stocks is still urgent and avoiding depleting still-healthy stocks as important, FAO Member States have expressed the need to further develop aquaculture as the only immediate way to bridge the gap between the dipping capture fisheries output and the increasing world demand for seafood.

7. Indeed, in the last three decades, aquaculture has recorded a significant and most rapid growth among the food-producing sectors and has developed into a globally robust and vital industry. However, aquaculture also has been shown at times to carry the potential to cause significant environmentally and socially adverse impacts.

8. Thus, the Nineteenth Session of the FAO Committee on Fisheries (COFI), held in March 1991, recommended that new approaches to fisheries and aquaculture management embracing conservation and environmental, as well as social and economic, considerations were urgently needed. FAO was asked to develop the concept of responsible fisheries and elaborate a Code of Conduct to foster its application.

9. Subsequently, the Government of Mexico, in collaboration with FAO, organized an International Conference on Responsible Fishing in Cancún in May 1992. The Declaration of Cancún, endorsed at that Conference, was brought to the attention of the United Nations Conference on Environment and Development Summit in Rio de Janeiro, Brazil, in June 1992, which supported the preparation of a Code of Conduct for Responsible Fisheries. The FAO Technical Consultation on High Seas Fishing, held in September 1992, further

recommended the elaboration of a code to address the issues regarding high seas fisheries.

10. The One Hundred and Second Session of the FAO Council, held in November 1992, discussed the elaboration of the Code, recommending that priority be given to high seas issues and requested that proposals for the Code be presented to the 1993 session of the Committee on Fisheries.

11. The twentieth session of COFI, held in March 1993, examined in general the proposed framework and content for such a Code, including the elaboration of guidelines, and endorsed a time frame for the further elaboration of the Code. It also requested FAO to prepare, on a “fast track” basis, as part of the Code, proposals to prevent reflagging of fishing vessels which affect conservation and management measures on the high seas. This resulted in the FAO Conference, at its Twenty-seventh Session in November 1993, adopting the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, which, according to FAO Conference Resolution 15/93, forms an integral part of the Code. It was also recognized and confirmed that issues of responsible aquaculture development and aquaculture sustainability should be addressed in the formulation process so that these be appropriately covered in the envisaged Code.

12. This implicit recognition of the importance of governance in aquaculture is underlined in Article 9.1.1 of the Code, which requires states to “establish, maintain and develop an appropriate legal and administrative framework to facilitate the development of responsible aquaculture”. In addition, at the beginning of the new millennium, there is growing recognition of the significant potential for the use of ocean and coastal waters for mariculture expansion. The outstanding issue in this area is that, unlike in capture fisheries, the existing applicable principles of public international law and treaty provisions provide little guidance on the conduct of aquaculture operations in these waters. Yet, experts agree that most of the future aquaculture expansion will occur in the seas and oceans, certainly further

offshore, perhaps even as far as the high seas. The regulatory vacuum for aquaculture in the high seas would have to be addressed should aquaculture operations expand there.

13. The Code was formulated so as to be interpreted and applied in conformity with the relevant rules of international law, as reflected in the 10 December 1982 United Nations Convention on the Law of the Sea. The Code is also in line with the Agreement for the Implementation of the Provisions of this Law, namely the 1995 Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. It is equally in line with, *inter alia*, the 1992 Declaration of Cancún and the 1992 Rio Declaration on Environment and Development, in particular Chapter 17 of Agenda 21.

14. The development of the Code was carried out by FAO in consultation and collaboration with relevant United Nations Agencies and other international organizations, including non-governmental organizations.

15. The Code of Conduct consists of five introductory articles: Nature and scope; Objectives; Relationship with other international instruments; Implementation, monitoring and updating; and Special requirements of developing countries. These introductory articles are followed by an article on General principles, which precedes the six thematic articles on Fisheries management, Fishing operations, Aquaculture development, Integration of fisheries into coastal area management, Post-harvest practices and trade, and Fisheries research. As already mentioned, the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas forms an integral part of the Code.

16. The Code is voluntary. However, certain parts of it are based on relevant rules of international law, as reflected in the United Nations Convention on the Law of the Sea of 10 December 1982. In capture fisheries, the Code also contains provisions that may be or have already been given binding effect by means of other obligatory legal instruments amongst the Parties, such as the Agreement to Promote Compliance with Conservation and

Management Measures by Fishing Vessels on the High Seas, 1993. In aquaculture, the provisions of the Code implicitly encourage participatory governance of the sector, which extends from industry self-regulation, to co-management of the sector by industry representatives and government regulators and to community partnerships. Compliance is self or enforced by peer pressure, with industry organizations having the ability to exclude those who do not comply and governments only checking periodically.

17. The Twenty-eighth Session of the Conference in Resolution 4/95 adopted the Code of Conduct for Responsible Fisheries on 31 October 1995. The same Resolution requested FAO *inter alia* to elaborate appropriate technical guidelines in support of the implementation of the Code in collaboration with members and interested relevant organizations.

18. The expanding role and increasing contribution of aquaculture to economic growth, social welfare as well as global food security was recognized and reiterated at international levels such as the 1995 FAO/Japan Conference on the Contribution of Fisheries and Aquaculture to Food Security, the 1996 World Food Summit, the 1999 Ministerial Meeting on Fisheries, the 2000 FAO/NACA [Network of Aquaculture Centres in Asia and the Pacific] Conference on Aquaculture in the Third Millennium and its Bangkok Declaration and Strategy, and most recently, the 2009 World Summit on Food Security.

19. The application of the ecosystem approach to fisheries and aquaculture as strategies for the development of the sector contributes to the implementation of the provisions of the Code, thereby enforcing the technical, ecological, economic and social sustainability of the industry.



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## BACKGROUND

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2. However, for nearly three decades, because of the dramatic increase of pollution, abusive fishing techniques worldwide, and illegal, unreported and unregulated fishing, catches and landings have been shrinking and fish stocks declining, often at alarming rates.

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4. Sustainability of societal benefits requires a recovery of depleted stocks and maintenance of the still-healthy ones, through sound management. In this regard, the adoption of the United Nations Convention on the Law of the Sea, in 1982 was instrumental. The law provides a new framework for the better management of marine resources. The new legal regime of the oceans gave coastal States rights and responsibilities for the management and use of fishery resources within the areas of their national jurisdiction, which embrace some 90 percent of the world's marine fisheries.

5. In recent years, world fisheries have become dynamically developing sectors of the food industry, and many States have



striven to take advantage of their new opportunities by investing in modern fishing fleets and processing factories in response to growing international demand for fish and fishery products. It became clear, however, that many fisheries resources could not sustain an often uncontrolled increase of exploitation. Overexploitation of important fish stocks, modifications of ecosystems, significant economic losses, and international conflicts on management and fish trade still threaten the long-term sustainability of fisheries and the contribution of fisheries to food supply.

6. In light of this situation, while recognizing that the recovery of depleted stocks is still urgent and avoiding depleting still-healthy stocks as important, FAO Member States have expressed the need to further develop aquaculture as the only immediate way to bridge the gap between the dipping capture fisheries output and the increasing world demand for seafood.

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11. The twentieth session of COFI, held in March 1993, examined in general the proposed framework and content for such a Code, including the elaboration of guidelines, and endorsed a time frame for the further elaboration of the Code. It also requested FAO to prepare, on a “fast track” basis, as part of the Code, proposals to prevent reflagging of fishing vessels which affect conservation and management measures on the high seas. This resulted in the FAO Conference, at its Twenty-seventh Session in November 1993, adopting the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, which, according to FAO Conference Resolution 15/93, forms an integral part of the Code. It was also recognized and confirmed that issues of responsible aquaculture development and aquaculture sustainability should be addressed in the formulation process so that these be appropriately covered in the envisaged Code.

12. This implicit recognition of the importance of governance in aquaculture is underlined in Article 9.1.1 of the Code, which requires states to “establish, maintain and develop an appropriate legal and administrative framework to facilitate the development of responsible aquaculture”. In addition, at the beginning of the new millennium, there is growing recognition of the significant potential for the use of ocean and coastal waters for mariculture expansion. The outstanding issue in this area is that, unlike in capture fisheries, the existing applicable principles of public international law and treaty provisions provide little guidance on the conduct of aquaculture operations in these waters. Yet, experts agree that most of the future aquaculture expansion will occur in the seas and oceans, certainly further

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Management Measures by Fishing Vessels on the High Seas, 1993. In aquaculture, the provisions of the Code implicitly encourage participatory governance of the sector, which extends from industry self-regulation, to co-management of the sector by industry representatives and government regulators and to community partnerships. Compliance is self or enforced by peer pressure, with industry organizations having the ability to exclude those who do not comply and governments only checking periodically.

17. The Twenty-eighth Session of the Conference in Resolution 4/95 adopted the Code of Conduct for Responsible Fisheries on 31 October 1995. The same Resolution requested FAO *inter alia* to elaborate appropriate technical guidelines in support of the implementation of the Code in collaboration with members and interested relevant organizations.

18. The expanding role and increasing contribution of aquaculture to economic growth, social welfare as well as global food security was recognized and reiterated at international levels such as the 1995 FAO/Japan Conference on the Contribution of Fisheries and Aquaculture to Food Security, the 1996 World Food Summit, the 1999 Ministerial Meeting on Fisheries, the 2000 FAO/NACA [Network of Aquaculture Centres in Asia and the Pacific] Conference on Aquaculture in the Third Millennium and its Bangkok Declaration and Strategy, and most recently, the 2009 World Summit on Food Security.

19. The application of the ecosystem approach to fisheries and aquaculture as strategies for the development of the sector contributes to the implementation of the provisions of the Code, thereby enforcing the technical, ecological, economic and social sustainability of the industry.

## 1. WHY AQUACULTURE AND WHY AQUACULTURE GOVERNANCE?

The reasons for promoting aquaculture are well known. As the global population and incomes increase, the world is expected to demand more aquatic food than the wild can provide. Aquaculture can close this expected gap. Aquaculture also has the potential to eliminate hunger and food and nutrition insecurity, as well as to reduce poverty generally, thereby contributing to the Sustainable Development Goals (SDGs).

Particularly over the last two decades, global production from aquaculture has grown substantially, providing significant volumes of fish and other aquatic food for human consumption, creating substantial employment and reducing poverty, often in remote areas. This trend is projected to continue as aquaculture continues to expand worldwide.

Good governance of aquaculture is a necessary condition for the sector to fully realize its potential for growth. Good governance will also ensure order and sustainability of this growth.

Certain characteristics of the sector further justify the need for its governance:

- The risk and uncertainty inherent in a new and rapidly changing sector.
- The comparatively recent “emergence” of aquaculture, which can create administrative duplication, and legislative vacuums.
- The interdependence with other sectors which often leads to competition with pre-existing sectors for access to productive resources.
- The complexity of aquaculture, partly as a result of the life cycles of aquatic organisms, as well as the management and technical requirements of growing them in captivity.
- The diversity of culture systems, sites, facilities, practices, and processes needed to deliver aquatic products.
- The wide range of political, social, economic and environmental conditions under which production occurs.

- New frontier technologies and new market opportunities are often characterized by ineffective controls. The latter may result in expansion which is far too rapid and uncontrollable, or booms and busts, environmental harm and social conflicts (because of the inequitable sharing of benefits and costs).
- Poor public awareness, which makes it difficult for all stakeholders to be updated on the real potential for action to solve problems and to seize social and economic opportunities in aquaculture.
- The need to ease public concerns at a time of growing environmental awareness, particularly when aquaculture uses common property resources.
- The need to regulate fish quality and safety; this not only applies to importing countries under pressure from their consumers, but also to domestic consumers, who increasingly demand assurances of fish quality and safety.

## **2. SCOPE**

These guidelines cover the establishment and implementation of good aquaculture governance in general and sector development in particular.

In addition to principles of good aquaculture governance, elements of these technical guidelines include good administration of the sector, good legal and regulatory frameworks, good licence policy and administration, and non-state participation in state decision-making and implementation.

Only areas over which the sector's governing authorities have control, be it partial or total, are covered: namely, the civil, industry and watershed levels—. The guidelines do not address macro-level principles over which aquaculture's governing authorities have no control, such as the process by which those in authority are selected, monitored and replaced.

### **3. APPLICATION**

These guidelines are to be interpreted and applied in their entirety in a manner consistent with national laws and regulations and, where applicable, international agreements. By promoting responsible production, they support Article 9 of the FAO Code of Conduct for Responsible Fisheries (CCRF) concerning aquaculture development, and in accordance with the ecosystem approach to aquaculture (EAA) (Box 1).

These guidelines are for use by government and non-government agencies responsible for aquaculture, and producer associations at the sub-national, national, regional and global level.

The objective of these guidelines is to assist policy makers and other stakeholders in the establishment and implementation of good governance in aquaculture by producing a blueprint of practices that can be tailored to suit particular administrative, cultural and legal environments. Such good governance practices could be adapted to any jurisdiction wishing to enhance aquaculture sustainability.

**Box 1****The Ecosystem Approach to Aquaculture (EAA)**

The ecosystem approach to aquaculture (EAA) provides a planning and management framework for integrating the aquaculture sector into local planning effectively. The approach provides clear mechanisms for producers and government authorities to engage with one another for the effective sustainable management of aquaculture operations by embracing the environmental, socio-economic and governance objectives of the sector simultaneously.

The EAA is guided by three strategic principles:

1. Aquaculture development and management should take account of the full range of ecosystem functions and services, and should not threaten the sustained delivery of these to society.
2. Aquaculture should improve human well-being and equity for all relevant stakeholders.
3. Aquaculture should be developed in the context of other sectors, policies and goals, as appropriate.

The CCRF prepared the grounds for the EAA by introducing the principles of sustainable development from the 1992 United Nations Conference on Environment and Development and Agenda 21 (UN 1992) to fisheries. In a similar manner, the EAA has been instrumental in raising awareness of the importance of these principles and placing them at the heart of aquaculture planning and the work of those supporting and acting for the development of the sector. The holistic approach to aquaculture development the EAA provides makes it unique compared to other food production sectors. For example, the EAA touches on inseparable planning and management issues, and uniquely captures interactions between aquaculture and capture fisheries at multiple scales.



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### 3. WHAT IS GOVERNANCE AND WHAT IS AQUACULTURE GOVERNANCE?

Governance concerns the processes relating to how:

- a country's productive resources are allocated and managed;
- citizens participate in decision-making and implementation of decisions taken;
- government is accountable to its citizens; and
- society obliges its members to observe its rules and laws.

In aquaculture, governance is the set of processes by which a nation manages its productive resources with respect to the sector, how its stakeholders participate in making and implementing decisions affecting aquaculture's development, how government personnel are accountable to the aquaculture community and other stakeholders, and how the respect for the rule of law is applied and enforced in aquaculture.

Aquaculture governance requires setting up and implementing policies, strategies and plans, laws and regulations, administrative and institutional arrangements to lead the development and growth of the sector. Its purpose is to promote sustainable aquaculture that is economically profitable, environmentally friendly and socially equitable.

Good aquaculture governance implies that these processes:

- incorporate multiple and often competing objectives, including an optimum utilization of resources, sustainable livelihoods and a reconciliation of the competing priorities and interests of different groups;
  - bring the short-term time horizons of private individuals into line with the intergenerational time horizons of society;
  - promote legitimacy by reflecting accepted norms of equity and by controlling harmful opportunistic behaviour;
  - ensure consistency and fairness of decision-making and implementation;
  - provide certainty to aquaculture stakeholders; and
  - contain the level and distribution of transaction costs.
- Application of these principles requires an ecosystem approach to aquaculture (EAA) development.

#### **4. KEY GUIDING PRINCIPLES OF GOOD GOVERNANCE IN AQUACULTURE**

There are four key principles that guide good governance in the aquaculture sector.

##### **Principle 1: Effectiveness and efficiency**

Effectiveness is results-oriented and refers to “doing the right things”. It is indicated by policies and strategies that meet expected outcomes, i.e. the promotion of sustainable aquaculture. Examples of effective governance mechanisms include rules and regulations, market forces, economic incentives, voluntary codes of practice, and responsible self-management. A further aspect of this principle is cost-effectiveness. Policies and strategies, which ensure that aquaculture is sustainable, must also be cost-effective or efficient, reflected in the saving of time (and resource).

For aquaculture, this implies that:

- Governments should provide and deliver essential services for aquaculture development effectively, in the most cost-effective way.
- Sector-specific policies, strategies, plans and regulations should be consistent with national policy objectives.
- Performance-based management systems are suggested as a means of increasing the effective and efficient delivery of services by the public sector.
- Three strategies can be used to enable performance-based management: integration, participation and subsidiarity.
  - Integration should be horizontal and vertical. Horizontal integration is the co-ordination of decision-making in aquaculture with other departments representing different sectors, such as agriculture and fisheries. Vertical integration is the integration of decision-making among different levels of government, federal, state, and municipal. Both aspects of integration must be accounted for to achieve performance.
  - Participation, or “voice”, refers to the incorporation of stakeholders, whether producers and other value chain actors or local communities, in decision-making.

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- Subsidiarity is the principle that management should be decentralised unless there is a reason for higher-level implementation. For example, subsidiarity would imply that local communities are involved with site selection, even determining criteria for this purpose.

Indications of ineffective and inefficient governance could be:

- over-regulation that deters investment and international competitiveness;
- conflicting regulations;
- multiple administrative layers to approve a licence;
- long delays, and “high” fees, to obtain a licence;
- criteria for obtaining a licence unclear and left to official discretion;
- decisions made in ignorance of different contexts;
- lack of capacity and resources to monitor and enforce regulations;
- lack of support from communities and stakeholders.

Improving effectiveness in governance should act on the supply side of aquaculture, such as the establishment of a lead agency, cost–benefit analysis of regulations, the establishment of one-stop-shops, encouraging stakeholder participation, capacity building.

### **Principle 2: Equity**

Equity means that policies and decisions regarding sustainable aquaculture development must take into account the interests of different groups of the current generation such as gender or youth (intragenerational equity) and safeguarding those of future generations (intergenerational equity). Equity therefore implies consensus-orientation and institutional responsiveness. Consensus-orientation means that good governance mediates differing interests to reach a broad agreement on procedures; institutional responsiveness means that institutions and processes serve all stakeholders, current and future.

### **Principle 3: Accountability**

Accountability refers to the degree to which officials are answerable to the public for their actions. Accountability is indicated by:

- openness of decision-making (officials should not be the sole decision makers);
- decision-making based on:
  - pre-established, transparent and known criteria such as licensing criteria, timely decisions, decisions open to appeal, clear delineation of administrative responsibilities; and
  - reduced secrecy by the industry. The industry should, for example, disseminate environmental information to local communities and jurisdictions; it should also provide any information requested by the competent authority, on a conditional.

#### **Principle 4: Predictability of rule of law**

Predictability of the rule of law means that:

- the application of laws and regulations is fair and consistent; and
- the decision-making process is transparent, open and clear.

Predictability of the rule of law is indicated, for example, by the security of property and lease rights, the security of tenure (whether freehold or usufruct), the transparency of criteria and procedures for the expropriation of land, licence renewal and taxation. Laws should also provide for and enforce the security of water access rights and property.

## **6. WHEN IS GOOD GOVERNANCE ACHIEVED IN AQUACULTURE? THE GUIDELINES**

Good governance in aquaculture is achieved when the underlying key principles are adhered to, and appropriate instruments are in place and implemented.

### **6.1 Good aquaculture administrative framework**

#### **6.1.1 Issues**

The structure of government affects governance. For example, federal systems tend to operate differently from more centralized forms of government. Historical antecedents, ecological endowment, economic conditions and other factors also influence governance.

Like legislation and regulations relevant to aquaculture, administration of aquaculture is often nested in several government

departments. Administrative overlap is inevitable for aquaculture because of its complexity and diversity, involving many sectors (e.g. water, land, agriculture, forestry, fisheries, transport, health, and tourism) but overlap is cumbersome and inefficient. Officials usually make decisions without transparent guidelines and in the absence of credible and robust data: moreover, there is often no opportunity for these decisions to be appealed, which can generate public mistrust of government policy.

### **6.1.2 Objectives for improvement**

- Clearer delineation of administrative and decision-making responsibilities.
- Performance-based standards along with mechanisms for enforcement, reporting, and auditing for administrators.
- Administrative processes that minimize transaction costs.
- Appeal of administrative decisions.

### **6.1.3 Guidelines**

A competent authority as the lead agency should be established to integrate, coordinate, plan and establish regulatory requirements for the sector (Box 2).

The roles and responsibilities of the lead agency should be clearly specified and include:

- coordination of horizontal and vertical integration with other departments which involve aspects of aquaculture;
- regular review of aquaculture legislation and regulations;
- responsibility for the negotiation and implementation of national, regional and international agreements;
- integration of administrative and regulatory initiatives of all activities related to – or impacting on – aquaculture, such as crop and livestock farming, forestry, human settlements, industrial development, tourism, water resources management and waste management;
- development of national sectoral policies, strategies and plans;
- continuous review of aquaculture legislation and regulations;
- coordination of consultative and participatory processes with stakeholders;

- setting of performance standards (accountability); and
- delegation of some responsibility to lower-level jurisdictions, particularly for coastal aquaculture (subsidiarity).

Criteria for decisions (i.e. licence approval) should be created in advance and be approved by the appropriate authority.

Where possible, decisions should be taken by the lowest-level competent authority, in line with the principle of subsidiarity. Where wider interests are at stake, higher-level decision-making might be necessary.

#### **Box 2**

##### **The competent authority as the lead agency in aquaculture**

The competent authority could be a designated government department or unit, or a new authority established for this purpose. It may be the Ministry of Fisheries so that it can be administered with regulations for the capture fisheries, e.g. Canada and Norway. The competent authority could also be the Ministry of Agriculture; for example, China's Bureau of Fisheries, India's Aquaculture Authority and Thailand's Department of Fisheries all fall under their respective Ministries of Agriculture. The lead agency comprises working groups, or a task force that is interdepartmental and with participants from different tiers of government (Brugère et al., 2010). An example is the Instituto Costarricense de Pesca y Acuicultura (INCOPECA) in Costa Rica, which was created as the lead agency for the development of aquaculture (and aquaculture research) in 1994. In Honduras, the Dirección General de Pesca y Acuicultura (DIGEPESCA) not only regulates the sector but also prepares the aquaculture plan. In Mozambique, the Instituto Nacional de Desenvolvimento de Aquacultura (INAQUA) plays the same role. It is responsible for research and the overseeing of incentives, as well as policy development and authorization of licences (INFOSA, 2009). Senegal's Agence nationale de l'aquaculture (ANA) prepares and implements aquaculture policies, strategies and plans, and promotes aquaculture research and development of the sector. Morocco's Agence Nationale pour le Développement de l'Aquaculture (ANDA) implements government's aquaculture strategy, action plans and promotes the aquaculture industry by encouraging exchanges at both the national and international level.

## 6.2 Good legal and regulatory frameworks

### 6.2.1 Issues

By virtue of its novelty and/or relative unimportance, aquaculture does not have dedicated legislation in some countries; instead it relies on laws and regulations designed for the capture fisheries. Aquaculture, therefore, often faces multiple and sometimes conflicting regulations over access to water and land, environmental requirements, zoning, animal health and welfare. This provides opportunities for rent-seeking by officials, and for the peddling of influence. In addition, property rights may be ambiguous or insecure, (creating the need for costly security), which can be a significant barrier to entry, and a disincentive for further investment in the sector. (Box 3).

#### Box 3

##### Importance of property and water access rights

Security of land and access to clean water are necessary to fish farmers. They enable an aquaculture facility farm to be established, financed and operated over the long term. In the case of freshwater aquaculture, land law may enable the farmer to obtain the necessary ownership interest in the ordinary manner. However, where the lands upon which the operations are to be conducted are owned by the state, or located in coastal zones, or held under traditional systems of tenure such as customary ownership, special considerations may apply. In all of these situations, the state may have restrictions on the extent to which private ownership rights may be legally granted in such lands. In this context, it is important to note that the operator does not necessarily need to own the land outright. It is only necessary for the operator to be able, through a lease or similar legal instrument, to obtain a right to the necessary lands that is sufficiently secure to allow the farm to be financed, to flourish over an extended period and to enable other people to be excluded from the property. In countries where the ability to grant private interests in state, coastal or traditional lands is limited, legislation should stipulate the nature of the rights which an operator can obtain and provide the necessary basis for excluding others from the property.

### **6.2.2 Objectives for improvement**

- Aquaculture producers are provided with a predictable regulatory environment.
- Regulation ensures that business risks can be assessed rationally and governmental arbitrariness is minimized.
- Security of property rights is enshrined in legislation.
- The legal framework provides security to an assured supply of good quality water.
- The exclusive right to the fish is legally guaranteed to the owner of the aquaculture facility.
- Regulatory frameworks are consistently and fairly applied.
- Powers for management and enforcement are clearly stipulated and understood by everyone concerned.

### **6.2.3 Guidelines**

Issues best served by hard law (legally enforceable instruments), soft law (quasi-legal instruments such as a code of conduct, code of practice, best management practices, good aquaculture practices) or economic incentives should be identified based on their nature and the resources available to implement regulations.

Issues requiring the enforcement of exclusivity are best served by hard law such as a licence or permit policies, access to water rights, zonation, etc.

Issues requiring encouraging progressive involvement and the adoption of appropriate on-farm measures, such as the regulation of aquaculture practices, product quality and feeds, are more likely to be suited to soft law (Box 4).

Economic and fiscal incentives should be explored as an alternative to hard or soft law. Experience indicates that fiscal incentives have been more effective than monetary incentives such as subsidies.

An appraisal process (such as a cost and benefit analysis) should be organized by the competent authority prior to the enactment of regulations, in order to determine the implications for monitoring and enforcement, and to guard against over-regulating the sector.



**Box 4**  
**Hard versus soft law in aquaculture governance**

Fish farmers, like most farmers, tend to be independent and sometimes isolationist in terms of how things are managed within the boundaries of their farms. This means that self-governance is likely to predominate in family and corporate fish farms – except in those cases where there is collaboration or collective action among farmers for technical, social, commercial or political reasons.

The competent authority, together with industry and producer associations, should ensure that best management practices and international codes of conduct are suitable for the aquaculture sector in the country.

The competent authority should ensure that private certification schemes do not duplicate government standards, as this will add compliance costs to farmers.

Widespread participation in the development of legislation is advisable to avoid legislative overlap and conflict. Participation also encourages support and compliance from stakeholders.

Adequate human and financial resources should be made available to encourage compliance and enforce legislation. Unsustainable practices have often been attributed to a lack of enforcement of existing regulations rather than a lack of legislation.

Periodic reviews of legislation should be undertaken to assess its relevance and effectiveness. This would lessen the likelihood of overlapping laws, regulations and jurisdictions that contribute to inefficiency and bureaucratic rigidity.

Stakeholders should be consulted prior to any change in legislative or regulatory arrangements, and wherever possible key stakeholders such as producer associations should be included in ongoing discussions.

Where industrial concentration may have a negative impact, anti-trust agencies and competition panels that are consistent with WTO rules should be established. Voluntary codes of conduct for

corporate governance to minimize the risk of dumping should also be established. Such voluntary codes can discourage over-regulation (Box 5).

**Box 5**  
**Over-regulation in aquaculture**

For internationally traded products, over-regulation can destroy comparative advantage if competitors have a framework that is more amenable to the industry.

This would suggest that regulations should be kept to a minimum. Indeed, some aquaculture has no adverse effects. Even when adverse effects are possible, self-regulation may be the best policy except for severe and irreversible impacts (Hishamunda *et al.*, 2014). For example, in Norway only the most serious diseases are prevented by government regulations such as quarantine or the slaughter and safe disposal of fish, regardless of whether they are healthy or infected; less serious diseases are the responsibility of the industry through Codes of Conduct and self-regulation.

### 6.3 Good licensing policy and administration

#### 6.3.1 Issues

Licence policy and administration is frequently the subject of criticism by farmers and potential investors. Often there are multiple layers of approval for a licence, long delays, heavy costs, unclear criteria for obtaining it, and excessive discretionary powers by officials. Where the licences granted are of short duration, or where uncertainty of renewal exists, farmers and investors are reluctant to invest in long-term, durable improvements.

#### 6.3.2 Objectives for improvement

- A clear, transparent and timely process for applications, evaluations and appeals.
- Licence fees cover the costs of administration and enforcement.
- Licensing takes into account aquaculture policy objectives such as intragenerational equity and environmental sustainability.

### 6.3.3 Guidelines

The requirement of a licence should be enshrined in law to confirm the right of the state to:

- directly regulate the operator of an aquaculture facility;
- enforce the basic rules of aquaculture;
- restrict the location and number of aquaculture facilities, and
- obtain public input on projected developments.

Legislation and regulations should enable the competent authority to grant and administer aquaculture licences.

All aquaculture operations should be licensed by the designated competent authority and a register of these licences maintained.

Public announcements about licence applications should be scheduled, predictable, and provide an opportunity for the public to object.

The licence should be granted long enough to enable the amortization of investment and encourage long-term planning.

The licence should be transferable or assignable (leased) to enable it to be used as collateral and to allow capital gains and economic efficiencies to be achieved. Concerns about concentration or monopolistic behaviour may require that transfers be approved by the competent authority. The criteria for refusing approval should be clearly stated.

Where licences are transferable, the register should include third party interests.

Administrative procedures for the application and granting of a licence should be transparent, publicly available and provided to all applicants. The information provided to applicants should include:

- eligibility criteria
- selection criteria
- decision-making process
- fees

- deadlines
- conditions, rights and obligations
- an appeals process if the decision is unfavourable.

Eligibility criteria could include: permits for water use; proof of ownership of land or lease of land; permission from traditional landowners; whether applicants must possess certain assets; perhaps a minimum qualification in aquaculture management and/or a minimum amount of capital.

Eligibility criteria should include information on the environmental sustainability of the operation. The requirements can be as extensive as a full environmental impact assessment or as minimal as the provision of a basic management and operational plan. An environmental impact assessment should be required only for those projects that present a genuine risk of environmental damage.

Eligibility and selection criteria should take into account national and sectoral development objectives such as gender equity and regional development.

The criteria for licence assessment should be clear and explicit, including the method of allocation, e.g. auctions, sealed bids or ranking.

The period from application and approval should be kept to a minimum, with publicly available, stated deadlines, so as not to impose a heavy burden on competitiveness. In Scotland, for example, deadlines are explicit for the processing of applications. In Viet Nam a decision has to be given within 90 days of the application; otherwise the applicant has a licence de facto.

Licence renewal should be subject to compliant behaviour, as per codes of conduct and good management practices, for example. The incorporation of a code into a licence is a useful means of providing the code with the force of law.

Grounds for non-renewal or amendment of licences must be transparent and clearly stated, with provisions made for a right of appeal.

Fees should include the administration, monitoring and enforcement costs amortized over the term of the licence.

## **6.4 Adequate non-state participation in decision-making and implementation for social licence**

### **6.4.1 Issues**

A lack of involvement of non-state participants in aquaculture governance may result in poor compliance. This, in turn, will lead to less effective and efficient governance and administration of the sector. Involving non-state participants can be a costly process. A balance must therefore be found between participation and cost.

### **6.4.2 Objectives for improvement**

- Cost-effective participation of non-state actors in the design and review of legal, regulatory and policy instruments for aquaculture.

### **6.4.3 Guidelines**

Consultation with local communities potentially impacted by an aquaculture operation should be mandatory prior to licence approval. For coastal zoning and integrated coastal zone management (ICZM), participation by local communities is essential.

If local communities are given the power of veto, they should be informed of lost employment and income opportunities as part of the discussion.

Producer associations should play a significant role in aquaculture governance. They should be included as active participants in discussions on legislation and perhaps in the co-management of the sector.

Geographically distant interests, which may conflict with local communities, should not be given precedence over community priorities.

## **6.5 Robust aquaculture statistics and adequate research in support of policy and planning**

### **6.5.1 Issues**

Accurate and reliable statistics are critical for effective policy-making: reliable and credible information enables the competent authority to design policies and strategies and evaluate their likely impacts more accurately. Insufficient and/or unreliable data can, therefore, penalise the sustainability of aquaculture. Data and research, therefore, enhance the relevance of laws and regulations, policy and planning frameworks and their responsiveness to dynamic developments in the sector. Gaining public acceptance and support (social licence) may be difficult without such information; there is an increased risk of non-acceptance by stakeholders and communities. Without social licence, policy and planning, legal and regulatory frameworks become irrelevant to the development of the sector.

### **6.5.2 Objectives for improvement**

- Data collection, which is focused, targeted and cost-effective.
- Demand-oriented and applied research which is relevant to the needs of the sector.
- Wide dissemination of research activities and findings.
- Improved communication with the public by government and industry.

### **6.5.3 Guidelines**

Data analysis and reporting should be regular and timely, as well as enabling regular input, review and verification by local communities, producers and other stakeholders.

A requirement to provide regular data or sample surveys as a condition of licence approval/renewal should be implemented.

Industry should be obliged to contribute to demand-oriented and applied research. This contribution could be one of the conditions required to deliver/renew an aquaculture licence. Public-private research partnerships have proven effective and should be encouraged in this and other areas.

Co-operation among research institutes, whether national or regional, should be encouraged as this increases the efficiency of research and knowledge transfer. Applied research findings must be widely disseminated to improve husbandry and, where appropriate, be incorporated in reviews of regulatory instruments.

Industry should provide complete information on escapes, diseases and other sources of negative environmental impacts. The competent authority should be notified before the information becomes public.

The competent authority (or an agency delegated with the responsibility) should evaluate conflicting scientific claims and communicate conclusions to the public. The authority must have credibility.

## **7 IMPLEMENTATION**

Implementing aquaculture strategies and policies should be the responsibility of a legitimate and competent authority (lead agency). It is, therefore, important to consider that:

- If such an entity does not exist, it may be necessary to establish it.
- If such an entity exists but does not have the capacity, it may choose to nominate external capacity to implement the process on its behalf and under its supervision.
- The legitimate and competent authority should consider the formation of a specific task force of working groups to facilitate the process, and steering committees to provide the necessary overview. Such groups should be suitably representative and may be either thematic or multidisciplinary.

The identified lead agency should coordinate aquaculture in the country. Major tasks would include coordination, organization and supervision of implementation activities.

The identified lead agency should work in partnership with all stakeholders, including institutions having a direct or indirect influence on aquaculture development, leaders from the community

and at other levels, as well as industry, academia, civil society, NGOs, etc.

An adequate regulatory and legal framework should be developed to ensure investment flows and the sustainable development of aquaculture.

Effective implementation of aquaculture governance guidelines requires systematic coordination, communication and cooperation between institutions, tiers of governments, producers and other stakeholders. Therefore, it may be necessary to:

- Ensure that the roles and responsibilities of government, private institutions, other stakeholders and donors for policy implementation are explicit, accountable and where necessary, supported by a legal framework.
- Agree on a lead agency that has legitimacy with other sectors, and an agreed mandate to reduce intragovernmental competition and promote efficient resource allocation.
- Establish effective coordination between local and provincial governments at the national level, as well as regional commissions and other countries is important in order to facilitate implementation.
- Disseminate adequate information in a timely and accessible manner to all relevant stakeholders. The channels for the dissemination of this information should be predefined and well publicized.

Where possible, decisions should be taken by the lowest-level competent authority according to the principle of subsidiarity. This suggests:

- Implementation should be informed by local circumstances, knowledge and concerns as far as possible.
- During the implementation process, the subsidiarity principle should be employed to delegate authority to the local level whenever possible, and to involve producers, producer organizations, civil society and other relevant stakeholders from the private sector.



- Criteria should be created in advance for making decisions and ensuring their approval by the appropriate competent authority.
- In certain circumstances, higher-level decision-making might be necessary where wider interests are at stake.

In order to implement these guidelines effectively, adequate resources need to be identified and allocated. Therefore it may be necessary to:

- Clearly identify and define priority actions, estimate costs and allocate appropriate resources.
- Ensure that policy delivery is not unduly influenced by the vested interests of external funding sources.

Implementation should be supported by a suitable legal framework. It may be necessary to:

- Conduct periodic reviews of legislation to assess the relevance, effectiveness and conflicts of aquaculture legislation – and other relevant laws – in relation to policy goals.
- Keep prohibitions and sanctions to a minimum, in order to avoid unnecessary restrictions to aquaculture development.
- Develop legislation to secure user rights and responsibilities (e.g. traditional rights as well as tenure mechanisms for leasing water bodies for aquaculture).
- Quantify the costs and benefits of regulation to ensure their efficacy prior to enactment.
- Ensure that there is a wide level of sectoral input into legislation development.
- Allocate adequate resources for the enforcement and compliance with sectoral legislation.
- Ensure that legislation clearly delimitates the mandate of key players in aquaculture development.

Incentives, where appropriate, should be used to encourage best practice throughout the sector. In such cases:

- Enshrine economic and other incentives for best practice in the legal framework, in order to ensure continuity in the face of political change.

Implementing aquaculture governance should be supported by appropriate research. With this in mind:

- research funding should reflect producer priorities and concerns;
- the research output should be as widely disseminated as possible, although it is recognized that some research will be proprietorial;
- research should be coordinated in order to minimize duplication and maximize efficacy;
- where appropriate, regional and international cooperation should be encouraged to combine experience, transfer knowledge and reduce costs. Mechanisms should be developed to improve feedback between farmers, extension services and researchers, and vice versa.

The impact of implementation should be monitored and evaluated to ensure that future policy development remains relevant and effective. Therefore it may be necessary to:

- establish measurable indicators (qualitative and quantitative) for the monitoring of policy inputs and impacts;
- allocate financial resources to the monitoring and evaluation of policy processes and impacts;
- put in place mechanisms for utilizing the impact analyses results (ex-ante baseline evaluation, recurrent and ex-post) and feeding these back into the process of policy formulation (including strategy).

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## REFERENCES

- Aguilar-Manjarrez, J., Soto, D. & Brummett, R.** 2017. *Aquaculture zoning, site selection and area management under the ecosystem approach to aquaculture. A handbook*. Report ACS18071. Rome, FAO, and World Bank Group, Washington DC. 62 pp. (also available at [www.fao.org/3/a-i6834e.pdf](http://www.fao.org/3/a-i6834e.pdf)).
- Aguilar-Manjarrez, J., Soto, D. & Brummett, R.** 2017 *Aquaculture zoning, site selection and area management under the ecosystem approach to aquaculture*. Full document. Report ACS113536. Rome, FAO, and World Bank Group, Washington DC. 395 pp. (also available at [www.fao.org/3/a-i6992e.pdf](http://www.fao.org/3/a-i6992e.pdf))
- Brugère, C., Ridler, N., Haylor, G., Macfadyen, G. & Hishamunda, N.** 2010. *Aquaculture planning, policy formulation and implementation for sustainable development*. FAO Fisheries and Aquaculture Technical Paper. No. 542. Rome, FAO. 70 pp (also available at [www.fao.org/docrep/012/i1601e/i1601e00.pdf](http://www.fao.org/docrep/012/i1601e/i1601e00.pdf)).
- Hishamunda, N., Ridler, N. & Martone, E.** 2014. *Policy and governance in aquaculture: lessons learned and way forward*. FAO Fisheries and Aquaculture Technical Paper. No. 577. Rome, FAO. 48 pp
- INFOSA.** 2009. *Small-scale Aquaculture Development Plan for Mozambique*. Windhoek, Namibia
- FAO.** 2010. *Aquaculture development. 4. Ecosystem approach to aquaculture*. FAO Technical Guidelines for Responsible Fisheries. No. 5, Suppl. 4. Rome, FAO. 53 pp. (also available at [www.fao.org/docrep/013/i1750e/i1750e00.htm](http://www.fao.org/docrep/013/i1750e/i1750e00.htm)).

## BIBLIOGRAPHY

- Bavinck, M., Chuenpagdee, R., Jentoft, S. & Kooiman, J., eds.** 2013. *Governability of Fisheries and Aquaculture: Theory and Applications*. Springer, Netherlands. 382 pp
- Bueno, P.B.** 2008. Social risks in aquaculture. In M.G. Bondad-Reantaso, J.R. Arthur and R.P. Subasinghe, eds. *Understanding and applying risk analysis in aquaculture*, pp. 209–228. FAO Fisheries and Aquaculture Technical Paper. No. 519. Rome, FAO.
- Brummett, R. E., Lazard, J. & Moehl, J.** 2008. African aquaculture: realizing the potential. *Food Policy*, 33: 371–385.
- FAO.** 2007. *Good Governance in Land Tenure and Administration*. Land Tenure Studies. No. 9. Rome.
- FAO.** 2008. *Report of the Expert Consultation on Improving Planning and Policy Development in Aquaculture*. FAO Fisheries Report No. 858. Rome. 27 pp.
- FAO.** 2008. *Towards better governance in aquaculture. Committee on Fisheries. Fourth Session of the Sub-Committee on Aquaculture, Puerto Varas, Chile, 6–10 October 2008*. COFI/AQ/IV/2008/5. Rome. pp
- FAO.** 2009. *Evaluation of FAO's Work on International Instruments. Hundred and First Session of the Programme Committee 11–15 May 2009*. Rome.
- FAO.** 1997. *Aquaculture Development*. FAO Technical Guidelines for Responsible Fisheries. No.5. Rome, FAO.

- 
- FAO.** 2016. *The State of World Fisheries and Aquaculture 2016*. Contributing to food security and nutrition for all. Rome. 200 pp. (also available at [www.fao.org/3/a-i5555e.pdf](http://www.fao.org/3/a-i5555e.pdf))
- FAO.** 2017. *National Aquaculture Legislation Overview*. Rome. (also available at [www.fao.org/fishery/nalo/search/en](http://www.fao.org/fishery/nalo/search/en))
- Hishamunda, N., Bueno, P., Menezes, A.M., Ridler, N., Wattage, P. & Martone, E.** 2014. *Improving governance in aquaculture employment: a global assessment*. FAO Fisheries and Aquaculture Technical Paper. No. 575. Rome. 59 pp.
- Lio, M. & Liu, M-C.** 2008. Governance and agricultural productivity: a cross-national Analysis. *Food Policy*. 33: 504–512.
- Satia, B.P.** 2011. *Regional Review on Status and Trends in Aquaculture in sub-Saharan Africa–2010*. FAO Fisheries and Aquaculture Circular. No. 1061/4. Rome. 152 pp.
- United Nations Economic and Social Commission for Asia and the Pacific.** 2009. *What is good governance?* (also available at [www.unescap.org/sites/default/files/good-governance.pdf](http://www.unescap.org/sites/default/files/good-governance.pdf)).
- World Bank.** 1991. *Managing Development: the Governance Dimension*. Washington, DC, World Bank (available at <http://documents.worldbank.org/curated/en/1991/08/6640845/managing-development-governance-dimension>).

## GLOSSARY

**Accountability:** implies a greater openness from administrations so that officials are answerable for their actions. For example, decisions on licences should be open to appeal and the criteria for licensing should be transparent. Accountability includes performance-based standards for officials, and mechanisms for reporting, auditing and enforcement. Accountability is also reflected in timely decisions (Hishamunda, Ridler and Martone, 2014). It does not only increase predictability for aquaculture producers and other stakeholders but also tends to reduce levels of corruption (Alesina and Weder, 1999). As an independent variable, it was one of the most statistically significant in explaining agricultural productivity across countries (Lio and Liu, 2008).

**Action plan:** time-bound, resourced plans to achieve strategy objectives and the implementation of strategy measures.

**Amortised payment:** the payment of debt (e.g. levies for enforcement and compliance costs) in regular instalments over a given period of time.

**Aquaculture production:** in economics, production is defined as the process of combining resources and forces in the creation of some valuable good or service (Crespi and Coche, 2008). Aquaculture production specifically refers to output from aquaculture activities, which are designated for final harvest either for consumption or other purposes e.g. ornamental purposes. Output is reported in weight (generally in tonnes of live weight equivalent for aquatic animals, in wet weight for aquatic plants) (FAO, 2004).

**Aquaculture:** the farming of aquatic organisms in inland and coastal areas, involving intervention in the rearing process to enhance production, and the individual or corporate ownership of the stock being cultivated (Crespi and Coche, 2008).

**Competent authority:** a legally recognized entity formally designated to exercise a particular function.

**Economic incentives:** the use of government expenditure or taxation to stimulate aquaculture. These represent policy instruments encouraging behaviour through price signals (e.g. pollution fees, tradable permits and environmental taxes) rather than through explicit instructions on pollution control levels or methods (FAO, 2008b). Some governments also use other forms of economic incentives, such as subsidised credit, in order to promote and support investments by small-scale farmers. However, other governments have abandoned this policy because of its apparent bias. Loans without collateral are another successful policy to target small-scale farmers (FAO, 2008c).

**Ecosystem Approach to Aquaculture (EAA):** is a strategy for the integration of the activity within the wider ecosystem such that it promotes sustainable development, equity, and the resilience of interlinked social-ecological systems

**Effectiveness and efficiency:** processes and institutions produce results that meet needs, while making the best use of resources (UNDP, 1997). Effectiveness and efficiency reflect the quality of administration and they are highly correlated with competitiveness indicators (Verheijen, 2009). They are also statistically very significant in comparing agricultural productivity across countries. For aquaculture, strategies, plans and regulations would need to be consistent with overall policy objectives, and be cost-effective. Performance-based management systems are suggested as a means to increase the effective and efficient delivery of services by the public sector (Verheijen, 2009). Some enabling measures may also enhance effectiveness and efficiency: integration, participation and subsidiarity (Hishamunda, Ridler and Martone, 2014).

**Expert:** is someone widely recognized as a reliable source of technique ability or skill whose faculty for judging or deciding rightly, justly or wisely is accorded authority and status by their peers or the public.

**Fiscal incentives:** are incentives, which provide favourable taxation treatment for aquaculture businesses. To encourage investment in aquaculture farming, the taxes on income, land and imports are exempted or reduced in several countries. They can also be species- or location-specific. Unlike economic incentives, fiscal incentives are not a direct cost for the public treasury. Governments have also used fiscal incentives such as “tax holidays” or exemptions from import duties to encourage foreign investment in aquaculture. A minimum requirement for the policy to be successful is to guarantee the repatriation of capital and profit. In some countries, foreign investors are restricted to joint ventures, or cannot exceed a certain share of total capital (FAO, 2008c).

**Fish:** literally, a cold-blooded lower vertebrate that has fins, gills and scales (usually), and lives in water. Used as a collective term, it includes fish, molluscs, crustaceans and any aquatic animal which is harvested (Crespi and Coche, 2008).

**Guideline:** a recommendation that leads or directs a course of action to achieve a certain goal.

**Hard law:** a substantive provision by which a country formally commits to take a particular action (FAO, 2009).

**Intergenerational equity:** the right of future generations to a resource inheritance which allows them to generate a level of wellbeing no less than that of the current generation.

**Intragenerational equity:** equity between different groups of people alive today; the principle that consumption and production in one community or society should not undermine the ecological, social, and economic basis for other communities to maintain or improve their quality of life.



**Legal frameworks:** all instruments which have a legal effect. An aquaculture legal framework should be understood as a body of law that supports aquaculture development and management by, inter alia: according powers, rights and responsibilities; defining relationships between different persons and entities in the sector; and setting out the mechanisms for solving differences and the enforcement of rights and responsibilities that are accorded.

**Measure:** any manoeuver made as part of progress towards a goal.

**Sustainable Development Goals (SDGs):** In 2015, the United Nations adopted the United Nations Sustainable Development Goals. The seventeen goals commit nations to end poverty in all its forms everywhere (SDG 1); end hunger, achieve food security and improved nutrition and promote sustainable agriculture (SDG 2); ensure healthy lives and promote well-being for all at all ages (SDG 3); ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (SDG 4); achieve gender equality and empower all women and girls (SDG 5); ensure availability and sustainable management of water and sanitation for all (SDG 6); ensure access to affordable, reliable, sustainable and modern energy for all (SDG 7); promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (SDG 8); build resilience infrastructure, promote inclusive and sustainable industrialization and foster innovation (SDG 9); reduce inequality within and among countries (SGD 10); make cities and human settlements inclusive, safe, resilient and sustainable (SDG 11); ensure sustainable consumption and production patterns (SGD 12); take urgent action to combat climate change and its impacts (SGD 13); conserve and sustainably use the oceans, seas and marine resources for sustainable development; (MDS 14); protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (SDG 15); promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels (SDG 16); strengthen the means of implementation and revitalize the global

partnership for sustainable development (SDG 17). The deadline for achieving these goals is 2030.

**Non-state participants:** persons or stakeholders who are not employees or representatives of government or quasi-governmental institutions or agencies.

**Participation:** participation is often interpreted in several ways in a development context; however, initiatives and activities in support of sustainable and equitable aquaculture development should strive for interactive participation. According to Pretty (1995), this occurs when, “People participate in joint analysis, the development of action plans and the formulation or strengthening of local institutions. Participation is seen as a right, not just the means to achieve project goals. The process involves interdisciplinary methodologies that seek multiple perspectives and make use of systemic and structured learning processes. As groups take control over local decisions and determine how available resources are used, so they have a stake in maintaining structures and practices.”

**Policy formulation:** the processes by which governments translate their political vision into programmes and actions to deliver desired changes in the real world.

**Policy:** a broad vision for a sector, reflecting its directions, priorities and development goals at various levels, including provincial, national, regional and international.

**Predictability:** refers to the fair and consistent application of laws and regulations. It also requires transparency with a clear and open decision-making process. It is linked to the World Bank’s principle of the rule of law, which was statistically very significant in explaining difference in agricultural productivity between countries. Lack of transparency – e.g. in licensing criteria – increases risks and transaction costs for entrepreneurs; if conditions are clear, on the other hand, predictability increases (Hishamunda, Ridler and Martone, 2014). With predictability,

property rights also become fungible, easing access to loans because they can be used as collateral. However, predictability also works in the reverse direction – property must not be subject to arbitrary confiscation and taxation. The grounds for expropriation of land or non-renewal of licences, and of taxation, must be transparent. This avoids arbitrary decisions subject to influence-peddling (FAO, 2007).

**Research:** a formal, systematic application of a scientific approach to the study of a problem, in order to discover new information or expand and verify existing knowledge. For the present purposes it covers biological, environmental, technical, market, economic, social and other relevant disciplines.

**Social licence:** social acceptability, also known as social licence, which means the degree to which aquaculture is accepted by neighbouring communities and wider society, is an integral part of governance and will become an increasingly critical sustainability factor, determining where aquaculture development occurs, if at all (Hishamunda, Poulain and Ridler, 2009; Lynch-Wood and Williamson, 2007).

**Soft law:** quasi-legal, voluntary, non-binding, pair or self-enforced governance instruments such as a code of conduct, code of practice, best management practice, good aquaculture practices. Soft law refers to non-binding legal instruments. It is often contrasted with “hard law”. Although of non-binding nature, soft law has a tremendous influence on the development of legislation. Generally and almost ineluctably, domestic and international practice will adopt such resolutions as parameters guiding its actions. Thereafter, a process of progressive hardening into law can take place. The Code of Conduct for Responsible Fisheries (Code of Conduct) is an example of a soft law instrument.

**Stakeholder:** an institution, organization, group or individual contributing to, or affected by, wealth-creating activities, and who is therefore a potential beneficiary, risk bearer and/or indirectly affected.

**Strategy:** a roadmap for the implementation of a policy that contains specific objectives, targets and instruments to address issues which might stimulate or impede the comparative advantage of the sector and obstruct its development.

**Subsidiarity:** the principle that local governments should make decisions that affect their jurisdictions unless there are potential repercussions that require higher level authority.

**Sustainable Aquaculture:** sustainable development is the management and conservation of the natural resource base and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development (in the agriculture, forestry and fisheries sectors) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable (FAO, 1988). The Conference on Aquaculture in the Third Millennium declared that the aquaculture sector should continue to be developed towards its full potential, making a net contribution to global food availability, household food security, economic growth, trade and improved living standards, and that the practice of aquaculture should be pursued as an integral component of development, contributing to sustainable livelihoods for poor sectors of the community, promoting human development and enhancing social well-being. The aquaculture policies and regulations should promote practical and economically viable farming and management practices that are environmentally responsible and socially acceptable (NACA/FAO, 2001). The promotion of sustainable aquaculture development requires that “enabling environments”, in particular those aimed at ensuring continuing human resource development and capacity building, are created and maintained. The FAO Code of Conduct for Responsible Fisheries contains principles and provisions in support of sustainable aquaculture development. The Code recognizes the Special Requirements of Developing Countries, and its Article 5 addresses these needs in

particular, notably in the areas of financial and technical assistance, technology transfer, and training and scientific cooperation.<sup>1</sup>

**Transaction costs:** in this context, the costs of arranging, monitoring, or enforcing agreements; the costs associated with all the exchanges that take place within an economy. The management structure influences the magnitude of transaction costs because it determines how users are coordinated, how information is generated, how decisions are made, and how monitoring and enforcement are carried out. They are costs to both government and to anyone accessing government services.

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<sup>1</sup> FAO. Sustainable aquaculture development. [www.fao.org/focus/e/fisheries/sustaq.htm](http://www.fao.org/focus/e/fisheries/sustaq.htm) (visited 24 December 2013)

The technical guidelines on “aquaculture governance and sector development” have been produced to support the implementation of Article 9 of the Code of Conduct for Responsible Fisheries on aquaculture development. These guidelines cover the establishment and implementation of good governance in aquaculture. In addition to principles of good aquaculture governance (effectiveness and efficiency, equity, accountability and predictability of the law), these technical guidelines include suggestions/recommendations for the aquaculture sector; its administration, its legal and regulatory framework, licence policies and non-state participation in decision making and implementation.

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