



**PART 2**

**SELECTED ISSUES  
IN FISHERIES AND  
AQUACULTURE**



## SELECTED ISSUES IN FISHERIES AND AQUACULTURE

### Climate change implications for fisheries and aquaculture

#### THE ISSUE

Climate change is a compounding threat to the sustainability of capture fisheries and aquaculture development. Impacts occur as a result of gradual warming at the global scale and associated physical changes, as well as consequences of the increased frequency of extreme weather events. These take place in the context of other global social and economic pressures on natural resources and ecosystems. In addition to action to mitigate the factors driving climate change, urgent adaptation measures are required in response to opportunities for and threats to food and livelihood provision arising from climate variations.

#### Physical and biological impacts

In terms of physical and biological impacts, climate change is modifying the distribution of marine and freshwater species. In general, warmer-water species are being displaced towards the poles and experiencing changes in habitat size and productivity. In a warmed world, ecosystem productivity is likely to decline in lower latitudes (i.e. most tropical and subtropical oceans, seas and lakes) and increase in high latitudes. Increased temperatures will also affect fish physiological processes, resulting in both positive and negative effects on fisheries and aquaculture systems.

Climate change is already affecting the seasonality of particular biological processes, altering marine and freshwater food webs, with unpredictable consequences for fish production. Increased risks of species invasions and the spread of vector-borne diseases raise additional concerns.

Differential warming between land and oceans and between polar and tropical regions will affect the intensity, frequency and seasonality of climate patterns (e.g. El Niño) and extreme weather events (e.g. floods, droughts and storms) and, hence, the stability of marine and freshwater resources adapted to or affected by them (Box 9).

Sea-level rise, glacier melting, ocean acidification and changes in precipitation, groundwater and river flows will affect coral reefs, wetlands, rivers, lakes and estuaries significantly. Such changes will require adaptive measures in order to exploit opportunities and to minimize negative impacts on fisheries and aquaculture systems.

#### Impacts on fisheries and aquaculture

The impacts of the above-mentioned changes on fisheries-dependent and aquaculture-dependent communities will be as varied as the changes themselves. In general, the strength of these impacts will depend on the vulnerability of each community. Community vulnerability depends on the sensitivity of the community and its exposure to the impacts, as well as its adaptive capacity (Box 10).

Aquatic-resource-dependent communities may face increased vulnerability in terms of less stable livelihoods, decreases in the availability and/or quality of fish for food, and risks to their own health if, for example, fishing under harsh weather conditions or farther from their home base. Overall, the impacts will result in changes, both positive and negative, in production and marketing costs, changes in the prices for fishery and aquaculture products, and increased risks of damage to or loss of infrastructure, tools and housing.

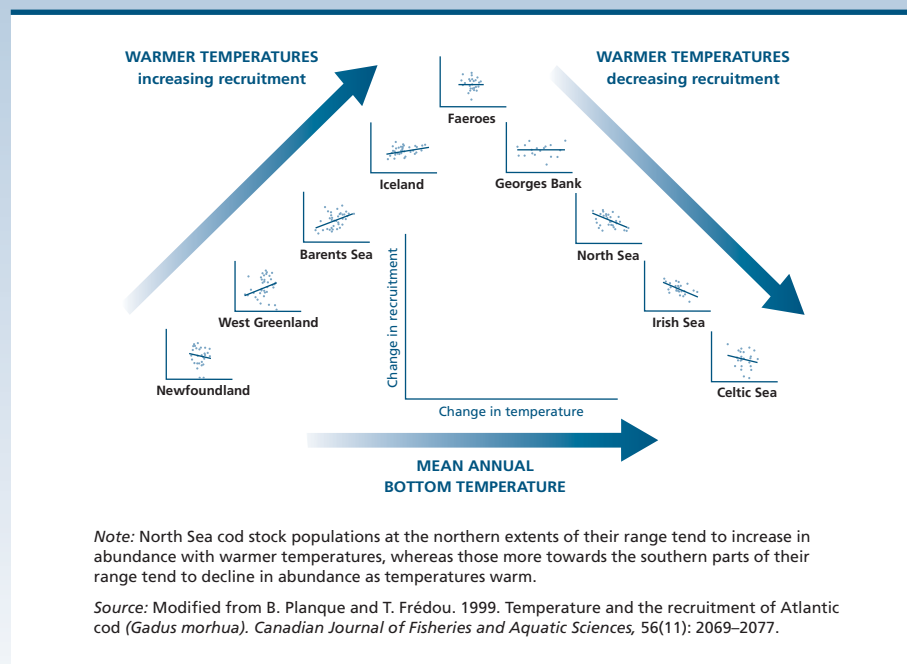
Fisheries located in the high latitudes and those reliant on systems particularly susceptible to climate change, such as upwelling and coral reef systems, appear to have



## Box 9

## Varying impacts of warming waters

Owing to the bell-shaped relationship between changes in stock recruitment and bottom temperatures (SST) for various cod stocks in the North Atlantic, populations at the poleward extents of their ranges tend to increase in abundance with warmer temperatures, whereas those in equatorial parts of their range tend to decline as temperatures warm.



the highest potential exposure to impacts. In addition, fisheries communities located in delta or on coral atolls and ice-dominated coasts will be particularly vulnerable to sea-level rise and the associated risks of flooding, saline intrusion and coastal erosion. Of particular concern will be those regions with low adaptive capacity to change, such as the countries of sub-Saharan Africa (SSA). Coastal communities and small island states without proper extreme-weather adaptation programmes, in terms of infrastructure design, early warning systems and knowledge of appropriate behaviour, will also be at high risk.

In relation to aquaculture and in terms of its production, Asia is the core and possibly the most sensitive continent for the time being. However, recognizing the high growth potential for aquaculture in Africa and Latin America, as well as in other regions, there is the need to address climate change implications in these continents, more specifically in relation to future aquaculture developments.

New opportunities and positive impacts (e.g. from changes in species and new markets) will also be part of future changes. At the moment, these opportunities are not well understood, but they will depend on adaptive capacity.

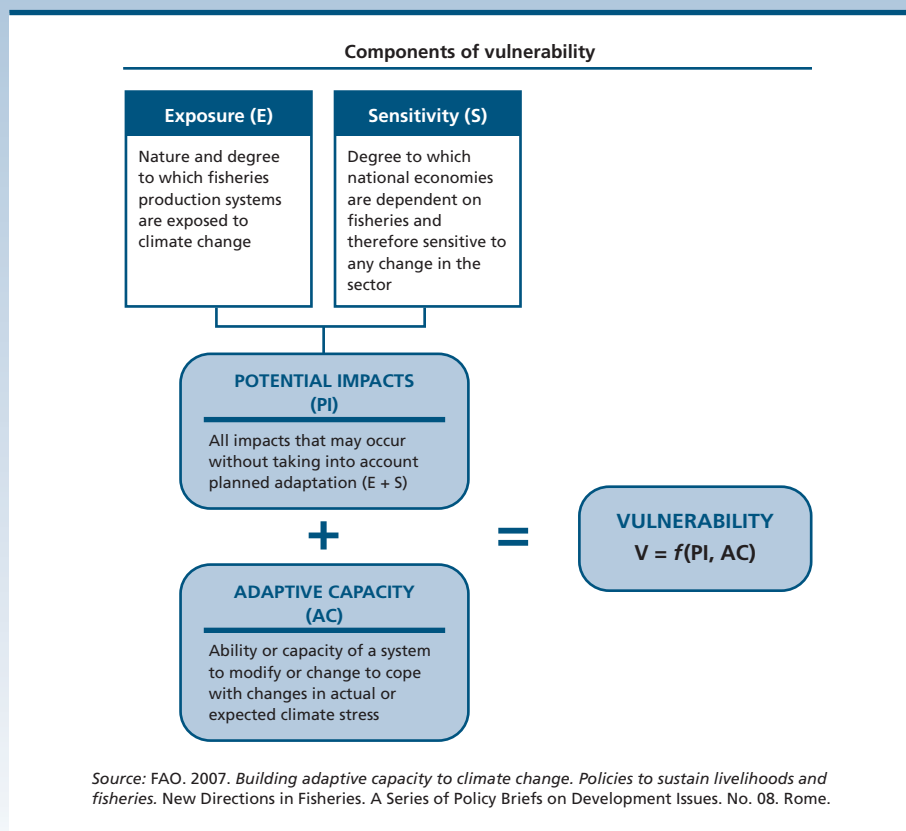
#### Carbon footprint of the fisheries and aquaculture sector

Fisheries and aquaculture activities make a minor but significant contribution to greenhouse gas (GHG) emissions during production operations and the transport, processing and storage of fish. There are significant differences in the emissions associated with the subsectors and with the species targeted or cultured.

## Box 10

## Components of vulnerability

The factors that determine the vulnerability of fisheries-dependent and aquaculture-dependent communities can be summarized thus:



The average ratio of fuel to carbon dioxide (CO<sub>2</sub>) emissions for capture fisheries has been estimated at about 3 teragrams of CO<sub>2</sub> per million tonnes of fuel used. Good fisheries management can substantially improve fuel efficiency for the sector as a whole. Overcapacity and excess effort lead to lower catches per unit of effort and, therefore, lower fuel efficiency, while competition for limited resources can create incentives to increase engine power.

Energy consumption in aquaculture, which includes that consumed in producing fish food, tends to be higher in shrimp and carnivorous finfish farms and lower in omnivorous finfish, mollusc, bivalve and algae farms. Estimates of the ratio of edible protein energy output to industrial energy inputs for these species range from 1.4 to more than 100 percent, respectively.

As in all food production sectors, post-harvest activities entail stocking, packaging, transport and post-consumption waste – all linked with CO<sub>2</sub> emissions. Of special note in the post-harvest/trade operations are the particularly high emissions per kilogram of aquatic products that are transported by air. Intercontinental airfreight may emit 8.5 kg of CO<sub>2</sub> per kilogram of fish transported. This is about 3.5 times that for sea freight and more than 90 times that from local transportation of fish where it is consumed within 400 kilometres of catch. The continuing internationalization of the fish trade, upon which many developing nations depend for valuable export earnings, will increase fisheries' contributions to CO<sub>2</sub> emissions. Therefore, there are potential

trade-offs to consider between developing-country export benefits and air transport mitigation efforts. However, these aspects need to be considered in relation to the relatively minor contribution of the fisheries and aquaculture sector to GHG emissions as a whole.

### POSSIBLE SOLUTIONS

The future impacts of climate change on fisheries and aquaculture are still poorly understood. The key to minimizing negative impacts and maximizing opportunities will be understanding and promoting the wide range of creative adaptive strategies – implemented by public institutions or the private sector – and their interactions with existing policy, legal and management frameworks.

Addressing the potential complexities of climate change interactions and their possible scales of impact requires the mainstreaming of cross-sectoral responses into governance frameworks. Responses are likely to be more timely, relevant and effective where they are brought into the normal processes of development and engage people and agencies at all levels. This requires not only the recognition of climate-related vectors and processes, and their interaction with others, but also the availability of sufficient information for effective decision-making and approaches that engage the public and private sectors.

The potential for the spatial displacement of aquatic resources and people as a result of climate change impacts and the impacts on transboundary resources requires

#### Box 11

##### Capacity building for climate change planning

Policy-making and action planning in response to climate change will require cooperation and coordination across a range of government line agencies and departments as well as community or political representatives at subnational and national levels. It will also be necessary to build and strengthen partnerships among public, private, civil society and non-governmental sectors. In addition:

- Nationally, information gaps and capacity-building requirements need to be identified and addressed through networks of research, training and academic agencies.
- Internationally, networks should be created or developed that encourage and enable regional or global exchanges of information and experiences, linking fisheries issues with those of other sectors such as water management, community development, trade and food security.
- Existing management plans for the fisheries and aquaculture sector, coastal zones and watersheds need to be reviewed and, where appropriate, further developed to ensure they cover potential climate change impacts, mitigations and adaptation responses. Connections to wider planning and strategic processes also need to be identified and adjusted.
- Communication and information processes that reach all stakeholders will be essential elements in sectoral responses. This will require focused application by communication specialists to ensure that the information is accessible and usable, presenting diverse and complex issues in a form that is targeted and understandable for each audience.



that existing regional structures and processes be strengthened or given more specific focus. Policy and legal mechanisms that address these issues will need to be developed or enhanced. Regional market and trading mechanisms are also likely to be more important in linking and buffering supply variability and maintaining sectoral value and investment.

Although generally perceived as having only negative impacts, climate change may provide the sector with an additional positive impetus to move towards sustainability. For example, the resilience and adaptive capacities of aquatic-resource ecosystems, fisheries and aquaculture production systems, and of aquatic-resource-dependent communities should be increased by applying existing good governance and management principles and approaches. Such approaches include the ecosystem approach to fisheries (EAF) and the ecosystem approach to aquaculture (EAA) – which include practices of adaptive and precautionary management based on appropriate social, economic, political and institutional incentives (Box 11). Similarly, improving the sector's fuel, energy and post-harvest efficiency would reduce its carbon footprint while bringing it closer to its sustainable development objectives.

### RECENT ACTIONS

International activity related to climate change is intense. However, most of it refers to research and international agreements. Research focuses on: tracking indicators of change; studying cause–effect relationships; and the modelling, assessing and forecasting of primarily land-based impacts. International agreements, such as the UN Framework Convention on Climate Change and related instruments, aim at mobilizing attention and commitments of governments to reduce GHGs.

In fisheries, while climate change is increasingly being addressed in the scientific literature, the subject is only beginning to be formally addressed by some industry or fishery management administrations. However, the fisheries and aquaculture sector, including its research establishments, is not unfamiliar with the issue of climate variability, and it is experienced in dealing with variability on a range of time scales, such as El Niño events, decadal changes in ocean environments and longer-term regime shifts. As a result, the observation programmes, scientific analyses, computer models, and the experience gained and strategies developed by fishers, processors, fish farmers and management authorities, are extremely useful in dealing with climate change. Many of the principles and strategies developed to deal with “unstable” stocks will be of use in addressing climate change. The challenges are: (i) to adapt these approaches to the wider, longer-lasting and more pronounced variability expected under climate change; and (ii) to build the capacity to implement these approaches in regions and fisheries with limited management capacity and high vulnerability.

### FUTURE PERSPECTIVE

The continued provision of food and livelihood security from fisheries and aquaculture systems will require additional multiscale understanding of the impacts of climate change and of the interacting contributions of fisheries and aquaculture to food and livelihood security. Significant knowledge gaps exist in relation to the responses and adaptations of marine and freshwater resources and ecosystems to climate change, including critical thresholds and points of no return. There is also considerable uncertainty over the synergistic interactions between climate change and other stressors (e.g. water use, eutrophication, fishing, agriculture and the use of alternative energy). This means that planning for uncertainty will need to consider the increased possibility of unforeseen events. Nevertheless, examples of past management practices in response to climate variability and extreme events can provide useful lessons for the future, even though they will have to be placed in context of greater uncertainty.

Better knowledge will be required about who is or will be vulnerable with respect to climate change, and food and livelihood security impacts, and about how this vulnerability arises and can be addressed. Better communication and application of what is known will be essential in knowledge building.



Innovative approaches will be needed in order to target financial instruments and create effective incentives to promote adaptation and mitigation efforts. At national and international levels, the public sector will have an important role in leveraging and integrating public-sector and private-sector investment, interacting through market mechanisms to meet sectoral aims for climate change responses and food and livelihood security. Many of these approaches are new and will need to be tested in the sector.

At national level, climate change action plans are likely to build on the FAO Code of Conduct for Responsible Fisheries (CCRF) and related international plans of action (IPOAs), guidelines and other instruments, incorporated into appropriately linked policy and legal frameworks and management plans. Responses will need to employ integrated ecosystem-based approaches for the sector throughout the entire resource-extraction, processing, supply and value chain. The future implications of climate change will intensify the justification for finding policy consensus to reform capture fisheries while respecting national-sector characteristics.

In addition, sectoral trade and competition issues linked with climate change mitigation and adaptation activities are likely to become more important at the global level. Therefore, fisheries sector representation in the pertinent policy and legal development processes is imperative.

### **The safety of fishing vessels and fishers: an opportunity to address safety in a holistic fashion**

#### **THE ISSUE**

In recent years, little progress has been made in improving the safety of fishers despite attempts by FAO and others to raise awareness of the severity of the problem. Fishing at sea is probably the most dangerous occupation in the world. The International Labour Organization (ILO) estimates that 24 000 fatalities occur worldwide per year in capture fisheries.<sup>1</sup> The consequences of loss of life fall heavily on the dependants. In many developing countries, these consequences can be devastating. Widows often have a low social standing, and where there is no welfare state to support families and no alternative source of income, widows and their children may face destitution.

The safety of fishing vessels and fishers involves several interrelated components, such as the design, construction and equipment of vessels. However, social and economic pressures as well as overcapacity and overfishing of coastal resources are probably the major factors that have negated efforts to improve safety at sea. Furthermore, safety issues on fishing vessels are of a different nature from those on merchant vessels. On the latter, the majority of hazardous operations are carried out in the safety of the port. On the former (particularly small fishing vessels), crews have to work at sea, on deck in all weathers, frequently with hatches open, in order to locate, gather and process their catch.

Working conditions and efficiency have improved in many ways with increased mechanization. However, new dangers have arisen and the strain on the crew remains considerable, not least because of reductions in crew size to cut costs. Safety regulations accepted by the merchant fleet have encountered resistance in the fisheries sector, where crews resent any restrictions that might affect their income.

A major concern is the persistent view that fishing vessels can only be made safer through: (i) regulations that affect their design, construction and equipment; and (ii) the training and certification of crews. While such interventions may yield effective results, data suggest that this is only sometimes the case. Human behaviour or error is estimated to be responsible for 80 percent of accidents in the fishing industry.<sup>2</sup> Most accidents occur as a result of poor judgement exercised during fishing operations, brought about by the pressure to increase profits (or simply to remain financially viable). In a situation of overcapacity and overfishing, the competition to catch limited resources is intense. The need for economic survival leads to risk-taking and insufficient crew size.



The resulting fatigue among those working at sea contributes to the poor safety record. The context in which judgement is affected is one where crews are competing within a time limit, or are striving to maximize their share of the total allowable catch (TAC) or to maximize their catches during a limited days-at-sea fishery. In some cases, remaining financially viable means cutting costs, with direct impacts on vessel maintenance, the provision of safety equipment, and crew size.

Fisheries management regimes affect safety. Therefore, improved safety should become an explicit objective of fisheries management, which must ensure that the fishing effort is commensurate with the state of fishery resources.

The main lesson learned from FAO's experiences in implementing safety activities is that recommendations, no matter how sound, do not form an adequate basis for administrations to act or for industry to respond. Despite the development of instruments and guidelines related to the design, construction and equipment of fishing vessels (with more stringent regulations at national level), the accident rate in the fishing industry remains unacceptably high.

The main cause of accidents and loss of life in the fishing industry is not only poorly designed, constructed or equipped vessels, but inappropriate human behaviour, sometimes compounded by error, negligence or ignorance. In some cases, there is a simple lack of awareness of safety issues, and fishing practices and seamanship may be poor. These behavioural traits, practices and malpractices are sometimes regarded as facets of the fishers' culture: "... a high risk of loss of life or injury has been accepted as a part of the 'fishing-culture'. A fisherman's life should and had to be dangerous. This attitude has perhaps been one of the major underestimated obstacles to improved safety and work environment in fishing."<sup>3</sup>

The safety of fishers at sea is as much a social issue as a technical one. Safety issues are multisectoral, and they have often been addressed on an ad hoc or piecemeal basis. The mandate for addressing safety for small-scale fishing is often unclear. Maritime administrations typically deal with the larger vessels, and fisheries administrations with fisheries management. There is a tendency for neither to address the safety of small fishing vessels adequately. Generally, administrations are vocal in their support, but specific actions are lacking. There is a need for an international organization such as FAO to lead the process of helping member countries in introducing and implementing appropriate measures. Safety at sea is a serious problem in both developing and developed countries. Effective solutions lie in the problem being tackled in a holistic fashion, while taking into account the nature and history of the fishing profession and the unique set of circumstances in which it is exercised.

### POSSIBLE SOLUTIONS

Safety in the fishing industry cannot be divorced from fisheries management, and this is recognized in the provisions of the FAO Code of Conduct for Responsible Fisheries (the Code). The Code, which was unanimously adopted on 31 October 1995 by the FAO's governing Conference, provides a necessary framework for national and international efforts to ensure sustainable exploitation of aquatic living resources in harmony with the environment. The Code, which is voluntary, also addresses safety and health in the fishing sector.<sup>4</sup>

Long-standing cooperation between FAO and the ILO and the International Maritime Organization (IMO) has led to the development of guidelines and standards on the safety of fishing vessels and fishers: the FAO/ILO/IMO Code of Safety of Fishermen and Fishing Vessels, Parts A and B; the FAO/ILO/IMO Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels; and the FAO/ILO/IMO Document for Guidance on Training and Certification of Fishing Vessel Personnel.

At the Twenty-seventh Session of the Committee on Fisheries (the Committee), a large number of Members expressed concern about safety at sea for fishing vessels, especially small-scale fishing vessels. FAO was urged to continue collaboration with the IMO, and it was suggested that FAO should develop guidelines on best practices for safety at sea. It was also suggested that the Committee should consider developing an IPOA on the subject.<sup>5</sup>



An IPOA on safety at sea, which would incorporate guidelines on best practices, could become another milestone on the path to improved safety, providing an opportunity to address safety in a holistic fashion.

An IPOA would have many advantages. Being a voluntary instrument, it would probably be easier to develop than a new binding international instrument. Foreseeably, it would apply to all sizes of vessel. It would have greater authority than guidelines. Following its adoption, such an IPOA would, in effect, require states to carry out a national audit of the problem and its underlying causes and to prescribe a broad range of actions to improve safety. It would also require states to report every two years to the Committee on actions undertaken and, thus, permit a sharing of experiences and lessons learned. The guidelines on best practices for safety at sea as referred to by the Committee would provide much of the substance supporting national plans of action.

### RECENT ACTIONS

FAO has carried out several regional projects on the safety of fishing vessels and fishers. It has also participated in international and regional conferences and workshops on the subject. The most recent initiatives have been: a regional workshop on small-scale fisheries in the Southwest Indian Ocean (organized in Moroni, Comoros, in December 2006 in collaboration with the National Directorate for Marine Resources in Comoros); and a regional workshop for the Latin American and Caribbean region (held in collaboration with the Latin American Organization for Fisheries Development in Paita, Peru, in July 2007). The workshops raised awareness of the extent of the problem among policy-makers and administrations of the regions. They also adopted recommendations addressing the need for:

- political will;
- a national lead agency;
- appropriate legislation;
- a database on accidents;
- the need to include safety for fishers in fisheries management.

The main features of FAO projects are: (i) reliance on the involvement of all concerned stakeholders through a process of active consultation and participation; and (ii) identification of the main problems and underlying causes of accidents, supported by data where available. Awareness raising of the severity of the problem at policy level is an essential component of these activities, as is the message that the safety problem is not insurmountable.

An important aspect of FAO's work concerning the safety of fishing vessels and fishers is the publication of fisheries technical papers, circulars and other documents on the subject. In addition to its extensive and broad range of publications addressing the design, construction and equipment of fishing vessels, all of which directly link to safety, FAO has also published a number of reports devoted to improving safety at sea.<sup>6</sup> Recently, FAO has carried out an extensive study on the impacts of fisheries management on fishers' safety.

Recently, the FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels (Parts A and B) and the FAO/ILO/IMO Voluntary Guidelines have been revised. Currently, FAO is working with the ILO and IMO to develop new safety standards for small fishing vessels not covered by the revised code and guidelines. The provisional title of these new standards is Safety recommendations for decked fishing vessels of less than 12 metres in length and undecked fishing vessels. The target completion date for this work, which also includes the development of guidelines for the implementation of Part B of the Code of Safety for Fishermen and Fishing Vessels, the Voluntary Guidelines and the Safety Recommendations, is 2010.

FAO has participated in the development of various instruments dealing with the safety of fishers and fishing vessels as well as the working and living conditions on board such vessels under the auspices of the IMO and ILO. These include: the Torremolinos International Convention for the Safety of Fishing Vessels, 1977;

the Torremolinos Protocol of 1993 relating to the Torremolinos Convention; the International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F), 1995; and the ILO Work in Fishing Convention, 2007 (No. 188). Despite all the work done in this regard, the effect of voluntary documents is often limited (unless they are continuously promoted), and mandatory instruments have little effect unless enforced.

The second meeting of the Joint IMO/FAO Ad Hoc Working Group on IUU Fishing and Related Matters was held on 16–18 July 2007 at FAO headquarters in Rome. The safety of fishing vessels and fishers was among the issues discussed. The joint working group (JWG) recommended that IMO, with the collaboration of FAO, should explore options relating to the implementation of the Torremolinos Protocol with a view to its early entry into force.

### **FUTURE PERSPECTIVE**

FAO will continue its collaboration with ILO and IMO on the issue of safety of fishing vessels and fishers. Apart from the ongoing work, FAO will assist ILO and IMO in bringing the existing binding instruments into force.<sup>7</sup>

Governments, in particular those from developing countries, will seek assistance from FAO and others in implementing the FAO/ILO/IMO Code of Safety for Fishermen and Fishing Vessels (Parts A and B) and the FAO/ILO/IMO Voluntary Guidelines. The need for awareness raising among governments, fishing-vessel owners, fishers, boatbuilders and other stakeholders of the safety issue will grow.

It is not unlikely that consumers will put pressure on the fishing industry and on governments to improve health and safety conditions on board fishing vessels. This is related to their concerns on overfished stocks, the safety and quality of fish products, environmental protection, and illegal, unreported and unregulated (IUU) fishing.



## **Private and public standards and certification schemes: synergy or competition?**

### **THE ISSUE**

#### **The context**

Fish and fishery products are the most internationally traded food commodity. In recent decades, more than one-third of total annual production (live weight equivalent) has entered international trade. About half of this trade (as measured in value) originates in developing countries, whereas more than 72 percent is destined for three main markets: the European Union (EU), Japan and the United States of America. These three markets dominate fish trade in terms of both prices and market access requirements.

While fish supply from wild capture fisheries has stagnated, the demand for fish and fishery products has continued to rise. Consumption has more than doubled since 1973. This increased demand has been met by a robust increase in aquaculture production (with volume growth estimated at an average of 9 percent per year in the period 1990–2006). Similarly, the contribution of aquaculture to fish food supply has increased significantly, reaching a high record of 47 percent in 2006 (compared with a mere 6 percent in 1970). This trend is projected to continue, reaching 60 percent by 2020.

In 2006, FAO reported on the impact of market-based standards and labels on the international fish trade.<sup>8</sup> The reasons for them, and their potential implications for fisheries and aquaculture, were analysed, with the emphasis on small-scale fisheries and exporting developing countries.

Since then, the power of retailers and supermarket chains has grown, as have the influence and concerns of civil society and consumer advocacy groups. Their concerns about human health and the social and environmental impacts of fisheries and aquaculture show no sign of abating. Non-governmental organizations (NGOs)

have tapped into or driven these concerns and developed strategies to influence both consumers' purchasing decisions and the procurement policies of large buyers and retailers. In turn, buyers and retailers have responded by imposing private standards and certification back through the supply chain, especially on producers and processors. These developments have led to a proliferation of certification bodies and schemes designed to trace the origin of food products, their quality and their safety. These schemes are also beginning to address the environmental and/or social conditions prevailing in fishing, aquaculture production, and the processing and distribution of capture fisheries and aquaculture produce and feed. The United Nations Conference on Trade and Development (UNCTAD) estimates the number of schemes at 400 and rising. Table 10 presents the main standards and certification schemes in use in fisheries and aquaculture.

### Implications

As standards, certification schemes and claims proliferate, producers and consumers are questioning their value. Producers and producing countries in particular question whether private standards and certification schemes duplicate or complement government work. In addition, consumers ask whether private schemes really provide better protection for them and the environment and/or contribute to social equity.

In areas such as food safety, animal health and environmental sustainability, government authorities have enacted laws and regulations, and they have developed inspection and certification programmes to enforce their application. Therefore, it is legitimate to question whether the work of private certification bodies is complementing or adding value to the work of governments or simply adding another level of compliance costs. These costs appear to fall disproportionately on producers. Concerns related to the costs and benefits for small-scale fisheries and aquaculture producers in developing countries have also been raised.

Many national sanitary regulations, standards and certification programmes are based on the work of the FAO/WHO Codex Alimentarius Commission, and of the World Organisation for Animal Health (OIE). Both are international organizations recognized by the World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement) as competent bodies for setting international trade standards for food safety and animal health, respectively.<sup>9</sup> Both organizations, as stipulated in the SPS Agreement, use scientific risk assessment to develop standards and a transparent, consultative process among their respective members to adopt them. Private standards developed to meet the needs of commercial parties (especially retailers and supermarkets) have not been tested for compliance with the disciplines of the SPS Agreement. Indeed, there is reason to believe that many private standards are not consistent with the obligations set in the SPS Agreement.<sup>10</sup> Growth in the implementation of private standards could ultimately undermine the hard-won improvements in international market access arrangements that have followed the establishment of the SPS Agreement in 1994.<sup>11</sup>

Consequently, many producers and exporting countries hold the view that private standards in the sanitary field represent unjustified restrictions to trade, especially where they introduce sanitary measures that duplicate those applied by the competent authority of the exporting country, which are based on the recommendations of relevant international standard-setting bodies (OIE and Codex Alimentarius Commission) or of the competent authority of the importing party (e.g. the EU Veterinary Commission).

Private standards are not always applied in a consistent manner to domestic and imported goods, or to all exporters, potentially leading to discriminatory treatment of certain products or countries. Indeed, some retailers currently impose a third-party certification in aquaculture because they claim that government certification processes are insufficient or of doubtful integrity. However, current practices do not support this claim. For example, many exporting countries have competent authorities accredited by the EU Veterinary Commission, which means they are capable of ensuring that

**Table 10**  
Standards and certification schemes used in fisheries and aquaculture

	Scheme type <sup>1</sup>	Main market orientation	Market access issues addressed				
			Food safety	Animal health	Environment	Social/ethical	Food quality
Codex Alimentarius	S, C, G	Global	√	-	-	?	√
World Organisation for Animal Health (OIE)	S, C, G	Global	√	√	-	?	-
GLOBALGAP	S, CS	Europe	√	√	√	-	?
Global Aquaculture Alliance and Aquaculture Certification Council	CS, L	United States of America	√	-	√	√	-
Naturland	CS, L	Europe	√	-	√	√	?
Soil Association	C, G	Global	√	√	√	√	√
Friend of the Sea	C?	United States of America	-	-	√	-	-
International Organization for Standardization ISO 234	C, S?	Japan	?	?	?	?	?
Seafood Watch	C, L	United States of America	-	-	√	-	-
Alter Trade Japan	C, L	Japan	?	?	√	√	?
Federation of European Aquaculture Producers Code of Conduct	?	Europe	√	√	√	√	√
Bio Suisse	C, L	Global	√	√	√	-	-
Safe Quality Food	S, L	Global	√	?	?	?	√
British Retail Consortium, International Food Standard, European Food Safety Inspection Service	S, L	Global	√	?	?	?	√
Quality Certification Services	CS, L	Global	√	?	?	?	√
Fairtrade	?	Europe	-	-	?	√	-
International Organization for Standardization ISO 22000	?	-	√	?	√	?	√
International Organization for Standardization ISO 9001/14001	S	Global	-	-	√	?	√
Marine Stewardship Council	C, S	United Kingdom, Europe	-	-	√	-	-





	Scheme type <sup>1</sup>	Main market orientation	Market access issues addressed				
			Food safety	Animal health	Environment	Social/ethical	Food quality
Fair-Fish	S, L	France, Europe	-	√	√	√	-
International Federation of Organic Agriculture	S, L	United Kingdom, Europe	√	√	√	√	√
International Social and Environmental Accreditation and Labelling Alliance	S, C, L	Global	-	-	√	√	-
Scottish Salmon Producers' Organisation	C, L	Global	√	√	√	-	√
Code of Good Practice	C, L	Global	-	-	√ Sustainability	-	-
Pêche responsable Carrefour, France	C, L	Global	√	√	√	-	√
Tartan Quality Mark	C, L	Global	√	√	√	-	√
SIGES Salmon Chile	CS, L	Europe	√	√	√	-	√
Shrimp quality guarantee Brazilian Shrimp Farmers Association, Brazil	CS, C, L	United Kingdom, Europe	√	√	√	√	√
Thai quality shrimp, GAP, Thailand	S, L	Europe	√	-	-	-	√
Code of Conduct certified Thai shrimp, Thailand	S, L	Europe	√	√	√	√	-
Naturland	S, L	New Zealand	√	-	√	√	?
Soil Association	S, L	Europe	√	√	√	√	√
Agriculture Biologique	S, L	Europe	√	√	√ Organic	-	-
Bioland, Germany	CS, L	Europe	√	√	√ Organic	-	-
BioGro, New Zealand	S, L	Global	√	√	√ Organic	-	-
Debio, Norway	CS, L	United Kingdom, Europe	√	√	√ Organic	-	-
KRAV, Sweden	C, L	Europe	√	√	√ Organic	-	-
Bio Suisse	C, L	France	√	√	√ Organic	-	-
National Association for Sustainable Agriculture Australia, Australia	C, L	Europe	√	√	√ Organic	-	-
Irish Quality Salmon and Trout	C, L	Europe	√	√	√ Organic	-	√
Label Rouge, France	C, L	Global	√	-	√	-	√
La Truite, Charte Qualité	C, L	France, Europe	√	-	-	-	√
Norway Royal Salmon	S, L	China	√	√	-	-	√

Scheme type <sup>1</sup>	Main market orientation	Market access issues addressed				
		Food safety	Animal health	Environment	Social/ethical	Food quality
Norge Seafood, Norway	S, L	-	-	√	-	-
Qualité-Aquaculture de France	S, L	-	-	√	-	√
Shrimp Seal of Quality, Bangladesh	S, L	√	-	√	√	√
China Organic Food	S, L	√	√	√ Organic	-	-
China Green Food	S, L	√	√	√	-	-
China Safe Agri Foods	C, L	√	-	-	-	√
ChinaGAP	C, CS	√	√	-	-	√
Fishmeal and fish oil Code of Responsible Practice	C, CS	√	-	√ Sustainability	-	√
The Responsible Fishing Scheme	C, CS	-	-	√ Responsible fishing	√ Safety of fishers	-

<sup>1</sup> S = standard; C = code; G = guidelines; L = label; CS = certification scheme.

Sources:

World Wide Fund for Nature. 2007. *Benchmarking study. Certification programmes for aquaculture. Environmental impacts, social issues and animal welfare*. Zurich, Switzerland, and Oslo, Norway.  
 FAO. 2008. *Ecolabels and marine capture fisheries: current practice and emerging issues*. Globefish Research Programme. Volume 91. Rome.  
 World Trade Organization. 1994. *Agreement on technical barriers to trade*. Geneva.



fish exports meet all the sanitary, production and processing requirements of the EU. Therefore, fish producers and exporters in these countries consider it unfair for any buyer or retailer in the importing country to impose third-party certification of sanitary issues. In addition, the costs of this certification, often high, are usually borne solely by the producers. Furthermore, there is no evidence that, in terms of consumer protection, private certification requirements add value to the current government and border inspection system. Moreover, as private standards are essentially private requirements imposed on suppliers by retailers, they may not be implemented or managed in a transparent manner.

This raises the issues of how to define boundaries between public regulations and private market standards, and of who is responsible for what and accountable to whom. While governments that are seen to use standards as trade barriers can be challenged through the rules of the WTO, what international mechanism or agreement should be invoked to challenge private companies whose standards are judged to create technical barriers to trade (TBT) between countries? Several countries and industry associations have raised serious concerns about the potential for private standards to limit or distort trade.

Proponents of private standards and certification schemes claim that they encourage suppliers to force the use of responsible practices in fisheries and aquaculture. Opponents see them as a private-sector attempt to replace/duplicate governmental policy in fisheries and aquaculture. The key issue is how private standards and certification schemes, if needed, can be reconciled with the public sector's responsibility to regulate the use of responsible practices in fisheries and aquaculture throughout the food chain.

A recent study by the World Wide Fund for Nature (WWF)<sup>12</sup> on standards and certification schemes used in aquaculture concludes that most of those analysed have significant shortcomings and lack an effective and credible regulatory framework. The shortcomings relevant to this context include:

- limited openness in governance of standards and insufficient multistakeholder participation in their development;
- few meaningful, measurable and verifiable criteria addressing the key areas of concern;
- insufficient independence in the operations of the bodies responsible for creating, holding, inspecting and certifying standards;
- frequent absence of effective mechanisms for applying corrective measures and sanction procedures as well as a deficient certification of the chain of custody.

#### **POSSIBLE SOLUTIONS**

The above issues are unlikely to be resolved without a concerted international effort. The growing influence of retailers and supermarket chains over the fish and seafood trade indicates a trend towards the increasing use of standards and certification schemes in fisheries and aquaculture. While the extent of private standards and certification schemes is not fully known, it is clear that effects differ from region to region. A precondition for an international understanding and an approach to dealing with this issue is better knowledge. More must be known about the effects of private standards and certification schemes. Such knowledge may enable solutions that will ensure the coherence of private standards with WTO trade rules.

It is also necessary to analyse whether and how private standards are duplicating or complementing the work of government authorities in order to guard against them undermining the operation of the SPS Agreement. Such an analysis should focus on the effects of private standards and certification schemes on the capacity of developing countries to access markets.

In order to reach an international solution to these issues, private standards and certification schemes must be transparent and harmonized with those of international standard-setting organizations such as the FAO/WHO Codex Alimentarius Commission (safety and quality, and import and export certification), the OIE (animal health and

welfare), FAO (ecolabelling, aquaculture and organic farming) and the International Organization for Standardization (ISO) (certification and accreditation). This will provide opportunities for mutual recognition of standards, and simplification of compliance procedures. In turn, this is likely to reduce costs, especially for developing countries and small enterprises where the burden is greatest.

Any solution will probably involve technical assistance and phase-in periods for small-scale producers and developing countries. International efforts to manage the negative impacts of standards will be more effective if they are coupled with similar efforts in regional and bilateral economic arrangements. In developing countries, external funds will be needed in order to support implementation and compliance. Industry standards would gain acceptance more readily if they were accompanied by realistic phase-in periods.

In aquaculture, many small-scale farmers face important technical, financial, knowledge and institutional constraints on their ability to adhere to certification schemes. It is estimated that more than 80 percent of the 12 million aquaculture farmers in Asia operate small-scale farms, from which a significant proportion of the production enters international markets. Their ability to comply with such schemes would increase if they were helped to develop farmers' associations, clusters or self-help groups. They could then respond collectively and be better placed to absorb institutional services and technical assistance. Such an approach has been successful in countries such as China, India, Thailand and Viet Nam. These experiences could be documented, and the lessons learned shared with fish farmers in other countries.<sup>13</sup>

### RECENT ACTIONS

Since the early 1990s, the WWF has spearheaded the creation of standards for agriculture, forestry, fisheries and, more recently, aquaculture. In fisheries, the WWF, along with Unilever PLC, created the Marine Stewardship Council (MSC), which developed an ecolabelling scheme aimed at sustainability in the capture fisheries sector.<sup>14</sup> Since 1999, the MSC has operated independently. It is the largest and most international of all ecolabelling schemes targeting sustainability in capture fisheries. It claims to cover 7 percent of global edible wild capture fisheries.<sup>15</sup>

Since 1999, the WWF has organized several round tables, referred to as "dialogues" or "aquadialogues", involving aquaculture producers, buyers, NGOs and other stakeholders. These round tables have been working to develop standards for aquaculture certification in order to minimize or eliminate negative environmental and social impacts of aquaculture. These standards aim to:

- build consensus about the key impacts;
- identify and support adoption or adaptation of better management practices that significantly reduce or eliminate such impacts;
- determine globally acceptable performance levels;
- contribute to global shifts in performance within the aquaculture industry.

The dialogue groups have identified 12 species for review based on their degree of impact on the environment and society, their market value, and the extent to which they are traded internationally. Discussions have focused on tilapia, salmon, molluscs, shrimp, *Pangasius* and catfish. It is hoped that, once finalized, these standards will serve as the basis for an aquaculture ecolabel and be entrusted to an existing or new certification entity to manage.<sup>16</sup>

At the WTO, the development of private-market standards and labels and their potential impact on international trade have been the subject of recent debates at several sessions of the Committee on Sanitary and Phytosanitary Measures (the SPS Committee).<sup>17</sup>

The issue of private standards was first raised officially in the WTO at a meeting of the SPS Committee in June 2005.<sup>18</sup> The debate gained further importance after the SPS Committee decided to make it a separate agenda item (it had previously been one among many "specific trade concerns"). In the course of 2006 and 2007, papers were circulated by the SPS Committee secretariat to governments, observers and



organizations. Meetings were held to discuss how standards could affect the trading opportunities of food exporters, particularly in developing countries. In June 2007, WTO and UNCTAD organized a workshop on private and commercial standards. At the workshop, presentations were made on: the "good agricultural practices" (GAPs) of GlobalGAP; the approaches of the retailer-driven Global Food Safety Initiative; and "the food safety management system standard ISO 22000". Studies on the development, impact and implications of private standards were also presented by UNCTAD, the Secretariat of the Committee on Technical Barriers to Trade, the Organisation for Economic Co-operation and Development (OECD) and FAO.

This is rather a new issue for the SPS Committee, which generally deals with standards set by international standard-setting bodies and the mandatory regulations imposed by governments. The debates examined whether private standards could be considered within the scope of the SPS Agreement and whether the SPS Committee was the right forum for discussing this issue, bearing in mind that many private standards are much broader than SPS (sometimes including environmental or labour provisions).

While several sanitary and phytosanitary provisions of the SPS Agreement apply directly to private standards, others do not. For example, Article 1.1 states that the SPS Agreement applies to "all sanitary and phytosanitary measures which may, directly or indirectly, affect international trade" without explicitly limiting this application to measures taken by governmental authorities. Similarly, the definition of a sanitary or phytosanitary measure in Annex A(1) and the accompanying illustrative list of measures do not explicitly limit these to governmental measures. On the other hand, other provisions of the SPS Agreement, including the basic rights and obligations in Article 2, explicitly refer to the rights and obligations of "Members".

Some private standards fall within the scope of the WTO Agreement on Technical Barriers to Trade (the TBT Agreement). The legal definitions given for standards, conformity assessment procedures and non-governmental bodies in Annex 1 to the TBT Agreement are of particular relevance in this regard (see also Article 3 of the TBT Agreement).

The debates at the SPS Committee have highlighted various concerns. Some members support private standards as a tool that can help suppliers to improve the quality of their products and gain access to markets. However, the majority, especially developing countries, argue that the proliferation of non-science-based standards set without consultation poses a challenge for their exports. These private standards often conflict with those set by governments or international organizations, are costly to comply with, and can become compulsory because non-complying suppliers are excluded from the market. Other issues raised were: the relationship between private and international standard-setting bodies; what governments might do to meet their obligation to ensure that private bodies comply with the SPS Agreement; the relationship with other areas of WTO work (such as TBT); and "equivalence".

Driven by members' concerns, the forthcoming sessions of the SPS Committee will probably debate the issue further, and several developing countries propose to bring concrete examples to the SPS Committee. In particular, the SPS Committee will discuss what reasonable measures members can take in order to ensure compliance by non-governmental entities with the SPS Agreement (as there is no jurisprudence on this matter). It will also examine what further actions it might take on this issue.

In FAO, private standards and certification schemes have been discussed at the Committee on Fisheries (COFI), in particular by its two subcommittees on aquaculture and on fish trade, respectively.

The Sub-Committee on Aquaculture, while recognizing the value of better management practices (BMPs) and certification for increasing public and consumer confidence in aquaculture production practices and products, has noted that many non-governmental certification schemes have resulted in higher costs for producers



without delivering significant price benefits to small-scale producers. It has pointed out that such schemes are disadvantageous to small-scale producers because they add to the costs of market access. It also recognizes that small-scale and large-scale producers have different needs and that these differences should be adequately addressed. The Sub-Committee on Aquaculture has commented that the emergence of a wide range of certification schemes and accreditation bodies is creating confusion among producers and consumers alike. It has stated that there is a need for more globally accepted norms for aquaculture production. These norms could provide better guidance and serve as a basis for improved harmonization by facilitating the mutual recognition and equivalence of such certification schemes.

Within the context of the application of the Code of Conduct for Responsible Fisheries (CCRF), the Sub-Committee on Aquaculture has requested FAO to organize an expert consultation to:

- make recommendations regarding the development of harmonized shrimp farming standards;
- review certification procedures for global acceptance and transparency.

The expert consultation should also help to elaborate norms and review the diverse options and relative benefits of its proposals. In this regard, the Sub-Committee on Aquaculture has encouraged FAO to play a lead role in facilitating the preparation of guidelines for the development of national and regional aquaculture standards. Several members of the subcommittee, as well as a number of intergovernmental organizations, have offered to cooperate at national, regional and international levels, and requested FAO to provide a platform for such collaboration. The subcommittee has also requested FAO to set up an expert group specifically to review certification of shrimp farming systems.

Since 2006, FAO and the Network of Aquaculture Centres in Asia-Pacific (NACA) have organized six consultative workshops in Asia, Europe, North America and South America to develop draft guidelines for aquaculture certification. These will be submitted to the FAO Committee on Fisheries, Sub-Committee on Aquaculture, for discussion and decision at its Fourth Session to be held in Puerto Varas, Chile, in October 2008.

The Tenth Session of the Sub-Committee on Fish Trade, held in Santiago de Compostela, Spain, in June 2006, also recommended that work be done on certification and harmonization. The subcommittee encouraged FAO to: (i) widen and expand the implementation of the safety and quality systems based on the Hazard Analysis and Critical Control Point (HACCP) system and the use of risk assessment as the basis for the development of fish standards; (ii) promote equivalence and harmonization; and (iii) monitor the border sanitary and quality controls used to regulate, restrict or prohibit trade (including their economic consequences). FAO was also requested to broaden the perspective and discussion to include:

- how developed countries could support the integration of small-scale fisheries into international trade through, for example, standard setting;
- intermediation, including financing issues;
- potential loss of bargaining power of small-scale fishers in obtaining fair prices for their products;
- traceability and ecolabelling;
- value chain analysis.

At its Eleventh Session (Bremen, Germany, 2–6 June 2008), the Sub-Committee on Fish Trade considered the trade implications of private standards and certification in fisheries and aquaculture. It provided guidance on how to address transparency, harmonization and complementarity of private and government standards. It requested FAO to undertake studies on the use of certification and ecolabelling in fisheries and aquaculture, including cost–benefit implications (especially for small-scale operations) and their applicability and credibility in adhering to FAO guidelines.



## OUTLOOK AND FUTURE PERSPECTIVE

Several recent developments are likely to lead to an expanded use of private standards and certification schemes in fisheries and aquaculture. These include:

- the increasing influence and concerns of civil society in relation to health, social and environmental issues;
- legal requirements for companies to demonstrate “due diligence” in the prevention of food safety risks;
- growing attention to “corporate social responsibility” and a drive by companies to minimize “reputational risks”;
- “globalization” of supply chains and a trend towards vertical integration through the use of direct contracts between suppliers and retailers;
- expansion of supermarkets in food retailing both nationally and internationally.

However, the extent of these developments and their implications for the governance of the international fish trade are not yet known and need to be studied. The ongoing work in FAO and WTO, organizations that provide an international framework to ensure transparency, will continue to promote the development of science-based standards, harmonization and equivalence in conformity with WTO trade measures and the standards of international standard setters such as the Codex Alimentarius Commission and the OIE. This may lead to an environment in which private standards and certification schemes complement and add value to the work of governments rather than duplicating it. If supported with appropriate technical assistance, such developments are likely to have positive economic implications, especially for small-scale fisheries and aquaculture producers in developing countries.

## Marine genetic resources in areas beyond national jurisdiction as related to marine biodiversity and the sustainable use of living marine resources

### THE ISSUE

During the process that led to the convening of the Third United Nations Conference on the Law of the Sea, and at the Conference itself, the negotiations related to the regime of the seabed beyond the limits of national jurisdiction focused mainly on the mineral resources in these areas, based on the assumption that these resources were the only ones of economic interest or consequence. Significantly, while the 1970 UN Declaration of Principles Governing the Sea-Bed and the Ocean Floor, and the Subsoil Thereof, beyond the Limits of National Jurisdiction did refer to “resources” in general, the 1982 UN Convention on the Law of the Sea, in its Article 133 defines the “resources” of the “Area” as: “all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules”. It further specifies that “resources, when recovered from the Area, are referred to as ‘minerals’”.

The negotiators of the UN Convention on the Law of the Sea could hardly have anticipated the extent of the scientific and technological development that was soon to open new perspectives on the potential uses of marine biodiversity, including in the seabed of areas beyond national jurisdiction (ABNJ).<sup>19</sup> Therefore, it is unlikely that the term “living marine resources” in the text of the 1982 convention was ever meant to encompass marine genetic resources (MGRs).<sup>20</sup> It was only later that the potential benefits of MGRs became known and appreciated beyond a specialized scientific community. Today, hydrothermal vents, seamounts and other deep seabed ecosystems rich in genetic biodiversity in ABNJ are being identified and studied with the support of the latest developments in technology, and the knowledge of these resources and of their potential uses continues to grow.

Marine genetic resources include genetic material from all living organisms in the oceans, such as mammals, fish, invertebrates, plants, fungi, bacteria, archaea and viruses.<sup>21</sup> These resources are components of marine biodiversity and, from a

commercial standpoint, basic raw material for the production of food, pharmaceuticals, cosmetics, etc.<sup>22</sup> However, a real appreciation of the breadth of uses and applications of MGRs for commercial activities is only now emerging. Uses vary from food additives to medicines. Hence, MGRs are coming to be seen as a potential source of financial wealth. Although the scope of these benefits is yet to be fully grasped, debates at international level have reflected the concerns of some states that activities aimed at generating said benefits might threaten sustainable use and disregard equity.

Activities such as bioprospecting for MGRs have progressed beyond simple observation of benthic fauna by submersible vessels to the sampling of this fauna and the installation of scientific instruments in the deep seabed.<sup>23</sup> At present, there is no comprehensive and specific mechanism that governs bioprospecting for MGRs<sup>24</sup> in ABNJ. Regulation of these activities has been on the agenda of the international community for some years, but no substantive and concrete steps have been taken, especially in terms of developing a regime for sustainable use. However, it is becoming increasingly urgent to find ways to address this challenge as bioprospecting activities are currently being undertaken on a first-come first-served basis. They have eclipsed commercial interest in mining for deep seabed minerals, as illustrated by the continuously expanding list of patents involving MGRs from the deep seabed.<sup>25</sup>

According to some countries, these MGRs, at least those of the seabed, should be fully assimilated to the resources regulated under Part XI of the 1982 Convention on the Law of the Sea as they are regarded as the common heritage of humankind.

However, other countries maintain that MGRs cannot be considered analogous to mineral resources but rather as belonging to the category of living marine resources. Thus, they would be subject to the legal regime applicable to these resources in the high seas, without the need for further distinction between MGRs that may be found on the seabed or in the superjacent waters. Those who hold this view argue that the principle of freedom of collecting and sampling MGRs in ABNJ should prevail, provided that these activities are carried out in accordance with international law and following approaches and strategies applicable to the protection of marine biodiversity in general.

### POSSIBLE SOLUTION

Against this background, discussions at international level have focused on a number of options, including the possible elaboration of a new legal regime for MGRs in ABNJ to be built upon the 1982 Convention on the Law of the Sea or developed taking into account the International Treaty on Plant Genetic Resources for Food and Agriculture (the Treaty) adopted by FAO.

Because of the specificity of the MGRs and the fact that the present provisions of the 1982 Convention on the Law of the Sea are clearly focused on fisheries, even when referring in general to living marine resources, the elaboration of a new legal regime may warrant further study.

The FAO Commission on Genetic Resources for Food and Agriculture (CGRFA)<sup>26</sup> was established in 1983 by the FAO Conference.<sup>27</sup> It was conceived as a permanent forum in which to reach international consensus on matters relating to the conservation and sustainable use of genetic resources and the fair and equitable sharing of benefits arising out of their use. Its extensive mandate now covers all biodiversity components of relevance to food and agriculture.<sup>28</sup> As a consequence, the CGRFA has recently adopted a Multi-Year Programme of Work – a ten-year road-map for the development of policies on crop, forest, farm animal, aquatic and micro-organism genetic resources.<sup>29</sup> The FAO Fisheries and Aquaculture Department is cooperating closely with the CGRFA on matters related to aquatic<sup>30</sup> genetic resources.

The Treaty,<sup>31</sup> which was negotiated through the CGRFA, pursues the conservation and sustainable use of plant genetic resources for food and agriculture as well as the fair and equitable sharing of the benefits arising from their use. Under the Treaty, benefits (which include transfer of technology, capacity building, exchange of information, and funding) must be shared on a multilateral basis. Anyone who



obtains commercial profit from the use of genetic resources administered multilaterally is obliged, by a standard material transfer agreement, to pay a percentage of the benefits to the multilateral mechanism used by the governing body of the Treaty. These funds are then used to mobilize support for priority activities, plans and programmes, particularly in developing countries.

The Treaty could be considered as one option and serve as a useful reference point to address MGRs in ABNJ, as it might provide a practical and working framework for multilateral benefit sharing within the UN system, as witnessed by the more than 90 000 transfers of genetic material in its first seven months of operation.<sup>32</sup>

### RECENT ACTIONS

The issue has been addressed by the United Nations General Assembly and its Ad Hoc Open-ended Informal Working Group as part of efforts to study issues relating to the conservation and sustainable use of marine biodiversity in ABNJ. These fora have been debating *inter alia* a perceived governance and regulatory gap for MGRs in ABNJ,<sup>33</sup> including whether there is a need for a new legal regime. They have been studying the way forward concerning policies<sup>34</sup> as well as options on how to guarantee the sustainable, and possibly equitable, use of MGRs.

Early in 2008, delegations acknowledged that the legal impasse on the status of MGRs in ABNJ should not prevent the development of practical measures to ensure their sustainable use. In addition to matters related to their sustainable use, it was suggested that the development of rules for access and benefit sharing should also be considered. This is particularly important in the interests of equity and, indeed, this issue is a prime concern for many developing countries.

At its Eleventh Regular Session (Rome, 11–15 June 2007), the CGRFA agreed to include aquatic genetic resources within the remit of its Multi-Year Programme of Work. It requested that "coverage of aquatic genetic resources under the Multi-year Programme of Work should be undertaken in collaboration with, *inter alia*; the FAO Committee on Fisheries, the Convention on Biological Diversity, the United Nations Convention on the Law of the Sea, the United Nations Informal Consultative Process on Oceans and the Law of the Sea, regional and international fisheries organizations and networks, and industry".<sup>35</sup> The CGRFA then pointed to the need for developing those elements of the FAO CCRF that may be relevant for the conservation and sustainable use of aquatic genetic resources.

FAO is working to develop a set of international guidelines for the management of deep-sea fisheries in the high seas with the aim of *inter alia* protecting vulnerable marine ecosystems and ensuring the sustainable use of their fisheries.<sup>36</sup> It is also undertaking relevant work on marine protected areas.

Finally, the UN General Assembly has invited FAO to contribute within its area of competence to the consideration of conservation and sustainable use of marine biodiversity in ABNJ.<sup>37</sup>

### FUTURE PERSPECTIVES

In response to the recent call by the UN General Assembly, a positive contribution, might be expected from the FAO, acting through the CGRFA and the COFI. The COFI in particular might decide to: (i) stimulate the development of the elements of the FAO CCRF that target maintaining genetic diversity, including MGRs; and (ii) foster discussions on the equitable sharing of benefits.



## NOTES

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3. J.-E. Sverre. 1989. Accidents in the Norwegian fishing fleet: preventive measures and resources in the event of man overboard. In: *International Symposium on Safety and Working Conditions aboard Fishing Vessels, Proceedings*, p.39. Rimouski, Canada, Université du Québec à Rimouski.
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26. Further information on the CGRFA is available on the Web site: <http://www.fao.org/ag/cgrfa/>
27. Resolution 9/83 of the twenty-second session of the FAO Conference on the "Establishment of a Commission on plant genetic resources" (available at <ftp://ftp.fao.org/ag/cgrfa/Res/C9-83E.pdf>).
28. The mandate of the CGRFA was reconsidered by means of Resolution 3/95 of the twenty-eighth session of the FAO Conference on "The broadening of the mandate of the FAO Commission on Plant Genetic Resources to cover genetic resources relevant to food and agriculture". At present, 168 countries and the European Community are members of the CGRFA. Membership is open to all FAO Members and Associate Members upon request.
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30. The FAO envisages MGRs within the broader framework of aquatic genetic resources. See C. Noiville. 1997. *Ressources génétiques et droit. Essai sur les régimes juridiques des ressources génétiques marines*. Monaco, Institut du Droit Économique de la Mer, and Paris, Éditions Pedone. pp. 146.
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32. Further information on the activities undertaken as part of the International Treaty on Plant Genetic Resources for Food and Agriculture is available at <ftp://ftp.fao.org/ag/agp/planttreaty/gb2/gb2w20e.pdf>
33. UN. 2007. *Oceans and the law of the sea. Report of the Secretary-General. Addendum. A/62/66/Add.2* (available at <http://daccessdds.un.org/doc/UNDOC/GEN/N07/500/06/PDF/N0750006.pdf?OpenElement>).
34. "It will be for States to decide on the way forward, bearing in mind that the legal framework for all activities in the oceans and seas is set out in UNCLOS." as cited in para. 334, note 8. UN. 2007. *Oceans and the law of the sea. Report of the Secretary-General. Addendum. A/62/66/Add.2* (available at <http://daccessdds.un.org/doc/UNDOC/GEN/N07/500/06/PDF/N0750006.pdf?OpenElement>).

35. Para 59 of the report of the Eleventh Regular Session of the CGRGA (available at <ftp://ftp.fao.org/ag/cgrfa/cgrfa11/r11repe.pdf>).
36. Further information is available on the Web site for the meetings of the Technical Consultation on International Guidelines for the Management of Deep-Sea Fisheries in the High Seas (Rome, 4–8 February and 25–29 August 2008), as well as the text of the guidelines as adopted by the Consultation (available at <http://www.fao.org/fishery/nems/36380/en>).
37. The invitation by the UN General Assembly to FAO to contribute within its area of competence to the consideration of conservation and sustainable use of marine biodiversity in ABNJ is expressed in General Assembly Resolution A/RES/62/215 on Oceans and the Law of the Sea, para. 103 (available at [http://www.un.org/Depts/los/general\\_assembly/general\\_assembly\\_resolutions.htm](http://www.un.org/Depts/los/general_assembly/general_assembly_resolutions.htm)).



