

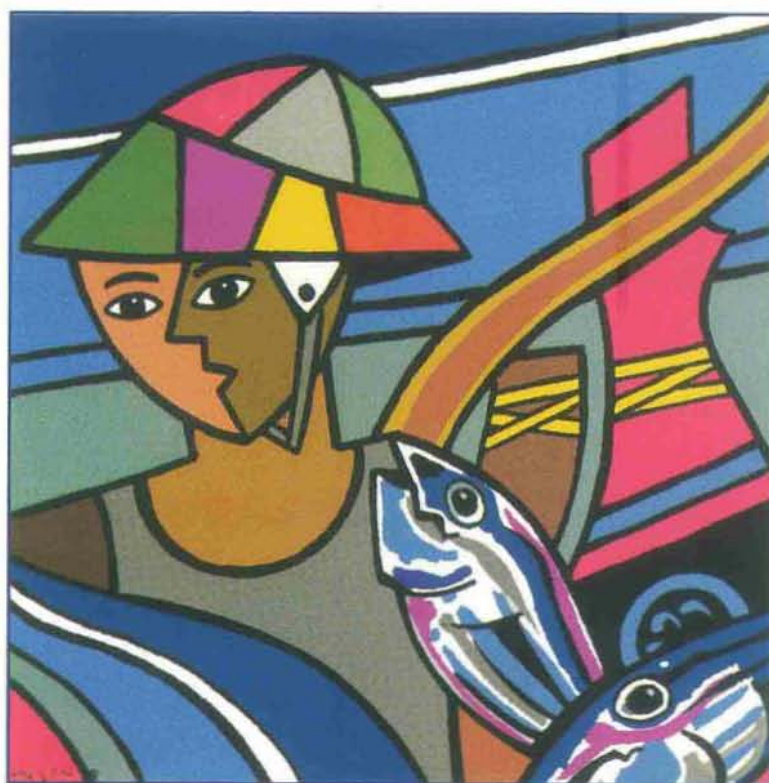
No. 23

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SAMUDRA

REPORT

INTERNATIONAL COLLECTIVE IN SUPPORT OF FISHWORKERS



Fishing Conflicts in Thailand

Lake Victoria's Fisheries

Tourism in Senegal

Focus on Safety at Sea

Co-operatives in Japan

Gender in Fisheries Management

Analysis of Fisheries Regulations

Common-property Fishing Rights

News Round-up

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Comment

Don't wait to be swept away

"The hurricane showed no mercy to the children of the sea," lamented a fisherman in the aftermath of Hurricane Thuth.

It was Saturday, 29 May 1999. "2A" or "Hurricane Thuth" travelled at the speed of an Avro aeroplane and hit the coastal border villages of India and Pakistan. About 300 people on the Indian side and around 500 on the Pakistan side perished. Thousands were rendered homeless. Almost all those who died on the Indian side, in the State of Gujarat, were fishermen. After this devastating incident, we at ICSF received a letter from a Gujarat fisherman asking why we do not carry any articles on aspects of safety of life at sea. His query made us sit up and think. SAMUDRA Report has, in fact, carried only a couple of articles on safety at sea, an issue vital to the lives of fishworkers. This issue of SAMUDRA Report is our answer to the Gujarat fisherman's query.

Not only due to natural calamities but also for several other reasons, fishing has been described as one of the most dangerous of all occupations. As Menakhem Ben-Yami, who recently did a report on health and safety in small-scale fisheries for an inter-governmental meet of FAO, ILO and IMO, points out in an article in this issue (page 24), risk is an inherent factor in any decision-making related to fishing operations at sea, much more than in any other sector. When and where to fish, when to run for shelter, what method or fishing gear to use; whether or not to change a fishing spot; when and how to set or haul a gear, and when and where to land the catch are all important decisions that are ridden with risk. And these decisions have to be made in the backdrop of factors such as weather conditions, the state of the boat and equipments, the skill level of crew members, and the economic incentives for risk-taking behaviour.

As Ben-Yami further points out, official national and international attitudes have always been focused on large- and medium-scale fisheries in spite of the fact that the rate of accidents and casualties at sea among small-scale fishermen is higher than the rate that prevails in the high-seas fisheries.

In the developed countries, in particular, modern fishing boats in the small-scale sector are taking on the features of larger ones, including heavy engines and deck machinery that make them sinkable as soon as they capsize or when they take in large amounts of water.

In developing countries, introduction of modern technology has upset the traditional way of doing things. The introduction of outboard motors in the artisanal sector, for example, has led to the abandonment of sails and neglect of sailing. A lack of appreciation of the limits of modern technology; a tendency to take needless risks; insufficient training in operating engines, navigation, electronic aids and safety equipment; first aid and emergency behaviour all contribute to worsening safety standards in small-scale fisheries, even when no cyclones strike, as Ben-Yami points out.

In many developing countries, cyclones are very destructive. As Bisessar Chakalall points out in his article (page 29), there have been no deaths of fishers in the Caribbean islands since 1985, thanks to early warning systems and better disaster preparedness. As far as these systems are concerned, there has to be greater co-ordination between different agencies.

There is need for internationally agreed rules for safety equipment and construction of small fishing vessels, and for the training and certification of their skippers and crew. There has to be a concerted move to enact legislation to minimize the risks and dangers in small-scale fisheries.

Fishworker organizations have to impress on their members the importance of taking safety aspects very seriously. Compared to developed countries, in developing countries human life may not appear to have any great value, but that is no reason to be complacent about safety matters and to get into action only when calamity strikes the coastal populations. Developing countries have to move from the syndrome of responding to catastrophes to one of putting a foolproof system in place.

Beyond the veil

A skewed model or image of community makes gender a non-issue in fisheries management

For current fisheries management systems and practices, women's concerns, interests and contributions are typically considered unimportant. It is not simply a matter of neglect but rather an issue of perceived irrelevance. This is an observation that fisheries social scientists share, and I believe it to be fairly accurate, in Norway and elsewhere.

One may wonder why this is so. Why are women's issues, interests and knowledge disregarded when governments design fisheries management systems? This is the question addressed in this article.

One reason, advanced in Norway by Siri Gerrard, is that women are conspicuously absent in management agencies. Thus, women in fisheries communities have few insiders who speak on their behalf when management decisions are made. Also, women in fisheries communities have been generally less effective than men as an outside political force, due to poorer organizational resources than their male counterparts. Another likely cause is the simple fact that the fishers targeted by management policies are predominantly men. In Norway, for instance, women constitute only two per cent of the registered fishing workforce. As a consequence, men's concerns in fisheries management are viewed as primary. Therefore, one may expect that more women in managing positions in government agencies would not make much of a difference as they would still be aimed at men as targets.

I do not intend to criticize these explanations. I believe they are part of the overall picture. My point is that there are additional and more subtle factors at play here. I suggest that women's issues are perceived as irrelevant by fisheries

managers for some of the same reasons that they regard social science to be irrelevant. Moreover, I argue that women's contributions and concerns are neglected because community and household are not part of the management equation. Typically, fisheries management is a relationship between a government and a rights holder, who, in most cases, is not a community or a household but an individual. I claim that fisheries management systems, as they are presently constructed in Norway and other North Atlantic countries, reflect a certain image of community that has the effect of veiling women's concerns and positive contributions to fisheries management.

Community is a missing link in fisheries management, as it also is in Garrett Hardin's model of the 'Tragedy of the Commons' that is at the root of prevailing management practices. But they both hold an implicit theory of community. Fishers are perceived as competitors in the fisheries commons, their social relations are overall "positional", as Fred Hirsch described relationships within zero-sum games. To use an example by Jean Paul Sartre, as in a bus queue, the people lined up may not have any other relation to each other than being at a particular place at a particular time, all with the same goal in mind, that is to get on the bus first and find a good seat. From the perspective of the individual, other passengers are nothing more than a nuisance. They are merely in the way.

Methodological individualism

Obviously, harvesters on the fishing ground can be seen in this way, likewise communities, especially if one adopts the perspectives of methodological individualism and rational choice that underpin the Garrett Hardin argument.

A different image regards community as a system of symbiotic relationships, where fishers and community members are mutually dependent and supportive, and where individuals regard each other as a group.

In the social science literature, local communities are frequently described as *gemeinschaft*, learning systems, moral communities, employment systems, or networks, all hinting at the integrative social qualities of communities. In this vision, communities are more than simply aggregates of individuals driven by self-centred utilitarian motives, as the former model takes for granted. Rather, communities are well connected systems rooted in kinship, culture and history.

To clarify further this point, one can fruitfully make use of the French sociologist Raymond Boudon's distinction between "functional" and "interdependent" systems. By the first category he means systems of interaction where the actors involved assume positions or roles within a scheme of division of labour. Thus, functional systems require a minimum of organization. A firm and a household are typical examples. Interdependent systems, on the other hand, are "those systems of interaction where individual actions can be analyzed without reference to the category of a role."

In interdependent systems, there are no predefined rights and obligations that relate actors to each other and prescribe their behaviour. Nevertheless, actors affect each other with their individual behaviour, and they typically produce collective phenomena which they do not foresee or want. The bus-queue example used above illustrates the basic traits of an interdependent system. The 'Tragedy of the Commons', as it is explained by Garrett Hardin, is another good illustration.

A fisheries management system based on the premise that fisheries communities are, by essence, interdependent, as Boudon defines it, risks dissipating the social capital that is invested in the community. It neglects what collective action, institutions and organizations can do to build communities. The interdependent systems model leads to few reservations regarding a fisheries management system aimed at downscaling the fishery. The fewer the bus passengers, the more comfortable the ride (but perhaps not so interesting?).

Interdependent model

Furthermore—and in this context, this is the main point—the interdependent systems model of the community totally overlooks women's roles and contributions in the fisheries community employment system and civil society. Since fisheries management

predominantly, but implicitly, rests on the interdependent systems model and not the functional model of the community, this effect is, of course, unfortunate but predictable. This model also leaves the scholarly contributions of fisheries sociologists and anthropologists outside the knowledge base on which managers draw, because these researchers are more inspired by the functional than the interdependent system model.

There is no need to go into a detailed description and discussion of women's efforts in fisheries. They are well documented in the social science literature. Donna Davis and Jane Nadel Klein's book, *To Work and to Weep*, is one reference. In Norway, Siri Gerrard's pioneering work on women's role as ground crew in the small-scale fishing enterprise stands out. The research programme Women in Fisheries Districts, initiated by the Norwegian Fisheries Research Council, further filled some of the gaps in existing knowledge. It is now well established that women provide a whole range of services that are key to the viability of the fishing household as well as the fishing enterprise of their spouses. This, of course, is a phenomenon that is not unique to Norwegian fisheries.

Liv Torill Pettersen's thesis on the economic contribution of women as a buffer in times of crisis, must also be mentioned. Likewise, Viggo Rossvær's recent book on Srvær, a crisis-ridden fishing community in Finnmark. Here, it is women's efforts, partly channelled through their local association Helselaget that keep the community together and maintain the spirit and life's meaning during times of crisis. In other words, women's contributions are not restricted to the household and their husbands' fishing enterprise. They also take on a responsibility for the whole community, also as community spokespersons *vis-à-vis* the society at large. Again, this is not unique to women in Norwegian fisheries communities.

The irony is that these contributions are mostly disregarded by fisheries managers who have their eyes fixed on the fish and the fishermen. Had they adopted the functional system model of fishing communities rather than the

interdependent model, they could not have avoided noting that fishing enterprises could only work within the larger context of the community, in which women play crucial roles. Then, they would have had to also recognize that women are stakeholders in fisheries management and that they also could legitimately claim to be holders of resource rights, a status which current management systems do not grant them, in fisheries less so than in other primary industries.

In a recently published article, I argue that not only are healthy fish stocks necessary for healthy communities, but that the reverse also holds true. Overfishing is not always a result of market failure, as the interdependent system model would have it, but a community failure. This is the community that fails to install self-restraint, high normative standards, social solidarity and cohesion among community members, and not least among the young fisher recruits.

Hence, a community which finds itself in a state of anomie, that has disintegrated socially and morally, has lost its ability to formally or informally sanction irregular fishing behaviour. This is perhaps the most serious crisis a fishing community may encounter.

Norwegian newspapers have recently reported that quotas are deliberately being exceeded, rules are ignored, and that a culture of cheating is spreading within the fishing industry, at the expense of the resource. I argue that this is what to be expected of a fisheries management system that have no appreciation of community as a functional system, where the roles and contributions of men and women are equally important, for the material as well as moral well-being of communities.

More than mere rules

What then is the answer to the shortcomings of fisheries management? Since healthy communities are vital to maintaining healthy fish stocks, fisheries management must consist of more than just rules and regulations that curb fishing effort. The community must be part of the fisheries management tool-box. Management must then also aim at

building communities. It must reinforce those conditions and processes that make geographical communities into communities in the sociological sense.

Resource rights should therefore be vested in communities; they should not be the privilege of individual fishermen. Then also the civic institutions of the coastal community, in which women have always played a crucial role, could not be defined as outside the fisheries management realm.

In other words, a more holistic management, community-centred approach is needed, an approach that recognizes women's contribution to communities' viability and hence stock conservation.

Only when the functional systems model of the community is adopted, would women's contributions to stock preservation become focused. Only then would the relevance of supporting women's work roles, associations and community initiatives be seen as relevant for fisheries management.

This is also why more women in management positions or more women on fishing vessels would not automatically change current management practice.

As long as the interdependent system model prevails as the dominant image of

community, gender will continue to be a non-issue in fisheries management, regardless of staff composition of management agencies and fishing enterprises.

This paper, by Svein Jentoft of the Institute of Planning and Community Studies at the University of Tromsø, Finland, was presented at the Women's World Conference, Tromsø, on 24 June 1999

Lake Victoria fisheries

Out of a lake

Growing demand for the white flesh of the Nile perch has integrated Lake Victoria's fisheries into the global economy

Lake Victoria is the second biggest freshwater lake in the world. With its 69,000 km area, the lake has the same size as Ireland. The lake is shared by three countries: Tanzania, which possesses 49 per cent of the area of the lake, Uganda, which has 45 per cent and Kenya, which has 6 per cent.

The total catch of fish from Lake Victoria during the 1960s and 1970s was quite stable: about 100,000 tonnes of fish was caught annually. During the late 1950s, Nile perch (*Lates niloticus*) was introduced in the Ugandan and Kenyan parts of Lake Victoria. Until 1979, the perch constituted only an insignificant part of the total catch. A rapid proliferation of the perch took place during the 1980s when the Nile perch, which is a predator, started to feed heavily on the indigenous fish of the lake. Lake Victoria became famous for the loss of an estimated two-thirds of its endemic cichlid fish species. With the dramatic decline in species, there was a simultaneous phenomenal increase in the total annual yield—from about 100,000 tonnes annually to 500,000 tonnes in the late 1980s and 1990s. In the last 10 years, FAO reports that about 25 per cent of the annual total catch from Africa's inland fisheries has come from Lake Victoria.

The major socioeconomic effect of the introduction of the Nile perch is the transformation of the fisheries from a local and regionally based fisheries to one closely integrated into the global economy. The reason for this integration into the global economy was the strong demand which developed in the rich industrialized countries for the white flesh of the Nile perch.

During the 1980s and 1990s, about 35 processing factories for Nile perch was established along the shores of Lake

Victoria. In these factories, the perch is filleted and then exported to Europe, Japan, the Middle East and the US. The international demand for the fillets of the perch is so strong that hardly any Nile perch below 1 kg is left for the local market. There is a strong competition among the factories to secure enough raw material, and most factories can only get enough fish to utilize about half of their invested capacity. Many of the factories established have received loans and development assistance from the international development banks and bilateral donors.

In 1996, IUCN (the World Conservation Union) started to implement a research project, entitled *Socioeconomics of the Nile perch Fishery on Lake Victoria*, documenting the effects of the globalization of the Lake Victoria fisheries. The main issues the project wanted to investigate were the following:

- What are the effects of the export of Nile perch on the food security of the local people?
- What are the effects of the export industry on the employment opportunities in the fisheries (the traditional production, processing and trading sectors)?
- What are the effects of the export industry on the sustainable utilization of the fish resources?

Report findings

Through a number of published reports (listed below), these issues have subsequently been documented. Briefly stated, the findings are: Although the catch of fish has increased fivefold, the consumption in many areas around the lake has been halved. Nutrition surveys

indicate that up to half the children around the lake are severely malnourished.


In Kenya, the annual per capita consumption has dropped from 6 kg to 3 kg during the last 15 years. Thousands of fishermen have lost their jobs as the factories have encouraged the adoption of new mechanized production technology (trawlers and a new drift-net technology).

Tens of thousands of women in the traditional processing and trading sectors have lost their jobs, as the large trucks from the factories take the fish directly from the beach to the factories. Stock assessment biologists have found many indications of too strong a fishing effort. The average size of the Nile perch caught has, for many years, been getting smaller.

These findings are based on a number of reports published by the IUCN project over the two last years, namely:

- *Rich Fisheries—Poor Fisherfolk: Some Preliminary Observations about the Effects of Trade and Aid in the Lake Victoria Fisheries* by Erik G. Jansen
- *From Local to Global Markets: The Fish-exporting and Fishmeal Industries of Lake Victoria—Structure, Strategies and Socioeconomic Impacts in Kenya* by Richard O. Abila and Erik G. Jansen
- *Trawling in Lake Victoria: Its History, Status and Effects* by James Siwo Mbuga, Albert Getabu, Andrew Asila, Modesta Medard and Richard O. Abila
- *Traditional and Central Management Systems of the Lake Victoria Fisheries in Kenya* by John P. Owino
- *A Review of Biodiversity and Socioeconomics Research in Relation to the Fisheries in Lake Victoria* by Okeyo-Owuor, J.B.
- *Constraints and Opportunities for Community Participation in the Management of the Lake Victoria*

Fisheries by Erik G. Jansen, Richard O. Abila and John P. Owino

In late 1999, new reports will be published on the macroeconomic context of the Lake Victoria fisheries and the changes of technology which have occurred in the production sector of the fisheries. These publications are freely available from: IUCN Eastern Africa Regional Office, P.O. Box 68200, Nairobi, Kenya (fax: 254 890615). 

This piece is by Erik G. Jansen of NORAD, on assignment as Technical Adviser to the IUCN project on Lake Victoria

What do fishermen really think?

Only a sense of belonging and involvement will induce fishermen to co-operate with fisheries regulation

Few would disagree that the success of a fisheries management system depends upon the co-operation of fishermen. In the context of European fisheries, where the management of the major fisheries is now firmly in the hands of non-fishermen, co-operation is now of the utmost importance. For a management system to function well, it has to ensure a high degree of compliance for a number of reasons. Non-compliance, particularly when it relates to overfishing, is harmful to fish stocks.

Non-compliance is also expensive—it requires extra resources to police and prosecute and, last but by no means least, non-compliance leads to false or inaccurate information and data which ultimately leads to misleading policy recommendations.

There are many ways to increase compliance levels in fisheries. The results of a study recently conducted in the UK suggest that understanding fishermen's perceptions of the aims and objectives of fisheries regulations is important.

If the regulators know how their advice and policies are going to be received, they can adapt the way the information is communicated to ensure that policies are understood, and appear believable and fair. Fishermen's perceptions of regulations can ultimately influence the success or failure of a regulatory system.

Fisheries management in the EU is a highly complex affair: it is bureaucratic, data-dependent, and the central decision-making body is often far removed from the fishing community. Therefore, effective communication and information are of paramount importance to make the system work and work well.

Effective communication consists of two elements: the credibility of the information and the credibility of its source. The means used to transmit information impacts upon how that information is received and understood. Failure to communicate the reason and rationale for certain regulations leads to increased non-compliance by fishermen who either fail to understand what is required of them, or wilfully disrupt the system because it is impeding their ability to make a living. Communication systems are needed in order that fisheries data can be transferred up the 'ladder' from the fishermen to the regulators, while information on policy changes and regulations needs to be communicated down the 'ladder'.

Yet, information and communication in the fisheries management system consist of more than numbers and regulations. Information on the aims and objectives of the management system is needed so that all stakeholders can participate in the decision-making process in a meaningful way. Communication also relies upon recognizing the networks already present: understanding where fishermen go for advice, who they are more likely to believe and how the information is perceived, is important. If the nodal points of information in the community are recognized and used by those outside the community, there is a much greater chance of co-operation evolving.

Information needs

Information in various forms is needed to manage all fisheries, but developed countries are particularly reliant upon data to support the management system. Much of the data required in those fisheries managed under the Common Fisheries Policy come from the fishermen, and in order for it to do what it was

intended to do, it has to be accurate. Effort, catch and landings data are all required to inform policy decisions and share the UK's TAC (Total Allowable Catch) allocation.

In the UK, quotas are a particular form of fishery management that relies upon information. Output quotas, such as catch and landings restrictions, are based on scientific assessment of the stocks. Some of the information that contribute to this assessment come from catch and landings records submitted by fishermen.

False information fed into the system will lead to inaccurate policy decisions. So, it is hardly surprising that critical to the quota decision-making process is the need for accurate data which, in turn, relies upon the quotas set being perceived as fair. However, attempts to improve the information on catch and landings are often undermined by the differing perceptions of fishermen and regulators. The fishermen have little faith in the way the information is used and the regulators fail to understand the implications of the request for more data on the livelihoods of the fishermen.

The failure of the regulators and the fishermen to understand or adequately communicate the end-use of the information affects its usefulness. The perceived overload of information required by the authorities leads to alienation—the fishermen increasingly feel that they are being prevented from fishing by mounting paper work. The result is an increased unwillingness to participate or co-operate with the system. On the other hand, management decisions based on inadequate data hold little water with fishermen who often refer to 'folk knowledge' with regard to stock levels, and have little faith in scientific analysis of fisheries. Confrontation frequently occurs when government predictions on stock levels fail to match with what the fishermen believe to be right.

A successful management system engenders a sense of 'ownership' in the system through increased participation by the resource users in the management process. This participation is, to an extent, made possible by improved communication and information flows.

Co-management, an issue much discussed in the literature on fisheries management, supports this point. However, there is some debate about the degree of participatory co-management in UK fisheries. There are a number of studies that have been done on compliance and co-operation levels in fisheries. These studies have attempted to identify, through econometric tests, the factors that are likely to lead to compliance. They have, on the whole, supported the arguments put forward by the co-management debate—that a sense of belonging and involvement is important to promoting compliance and co-operation.

Contributing further to the compliance/co-management debate, a study was conducted in the UK in the winter of 1997, with funding from the EU, to find out precisely what factors led to higher levels of compliance. The study interviewed 69 skippers of vessels over 10m fishing against quota species. Using data collected from both open and closed questions, a picture emerged of fishermen's perceptions about quotas, their involvement in the management process, and the nature of the relationship between themselves and scientists. Quotas are one of the most important restrictions facing fishermen in the UK, and fines for landing fish in excess of their quota can be large.

It is perhaps not surprising to learn that the fishermen interviewed believed that they were the most law-abiding of all (compared to fishermen in the rest of the UK and Europe) and that they were the most targeted by the authorities (who have powers to board vessels to check that the quantity of fish on board matches that recorded in the logbook).

Although 43.5 per cent of those interviewed estimated that up to 10 per cent of their landings of quota species the previous year had been over-quota, the myth that this was slight compared to other communities was powerful and deeply embedded.

Little evidence

There is little evidence to support the perception of the fishermen that foreign vessels are openly flouting the law, yet,

the fact that they perceive themselves to be the most law-abiding and yet the most targeted impacts upon their attitude to the system. Many of those interviewed felt they were picked on by the authorities and could not win in a system that was regarded as so unfair and biased.

Information and communication proved themselves important in maintaining morale in the community, and there was a strong sense of identity. However, despite the often-stated feeling that landing over-quota was damaging stocks and distorting the system, and despite knowing that fishermen in their region were landing over-quota, none of the fishermen interviewed had ever reported another fisherman for landing over-quota fish. There are a number of reasons for this. Firstly, they seemed unwilling to report what they felt rather than knew for sure. Secondly, there was a sense that they all had to live together as a community, and turning over friends and colleagues to the authorities was not the best way to maintain community cohesiveness.

The quota system is an extremely contentious factor in British fisheries, but an interesting result of the study was that only 38 per cent of those interviewed wanted to see the system abolished. Even those fishermen who claimed to have landed over-quota fish in the previous year (and therefore, presumably, saw

quotas as a barrier to earning a good living) were more likely to think that the system should be improved rather than abolished.

Some fishermen approved of quotas as an effort management tool and even reported that they agreed with the right of the EU to manage quotas under the present system. There was overwhelming support for the view that the present system would work better if the quotas were more fairly distributed both among groups in the UK and between countries in the EU.

Although most stated that they understood the rationale behind quotas (to maintain catches at a sustainable level), few considered the system logical in the way it allocated quota between countries and groups of fishermen. They felt that other groups in the UK and in other member States got larger quotas than they did, often as a result of political expediency and wholesale cheating. There is, of course, no evidence to support these allegations, but they have become a founding myth of the CFP fisheries management history.

False information

In addition to the issue of allocation, fishermen considered one of the main problems with the quota system to be the amount of false information upon which they believe quotas are based. Since the fish landed over-quota fails to find its way

into the official figures (false landing declarations are submitted), the fishermen believe that the quotas based on landing declarations are highly inaccurate, have no legitimacy and are thus abused.

This results in a vicious circle: the fishermen agree with quotas but disagree with how they are shared out and how they are set. Since they dispute quota sizes, they ignore them, which leads to more inaccurate quotas the following year, and thus the cycle continues ad infinitum.

More than 80 per cent of the fishermen said they found it difficult to take quota restrictions seriously because they believed there were plenty of fish on the grounds. The pessimistic predictions from fisheries scientists simply did not match what they believed to be the situation.

While the fishermen undoubtedly have knowledge of the state of the stocks in the waters they regularly fish, and base their assumption on visual sightings and catches, the scientists base their knowledge on information not readily perceptible to the eye: size and distribution of the species, and the state of related stocks in neighbouring fishing grounds. Improved communication between scientists and fishermen is needed so that a measure of compromise between 'scientific knowledge' and 'folk knowledge' is achieved. The result should be that quota decisions and allocations are understood and respected by both sides.

Although the fishermen accepted quotas as a means of regulating catches, nearly 40 per cent of them wanted to see quotas supplemented with technical measures (such as square-mesh nets). This, however, is an odd finding: some have argued in the fisheries literature that, given the opportunity to manage themselves, fishermen rarely impose catch limits but do impose limits on fishing time, gear, etc.

Visible inputs such as gear restrictions are cheaper and easier to police. Setting catch limits is an expensive exercise, and enforcing those limits is difficult. Catch or landing quotas also require decisions to be made on 'wealth distribution' which most fishing communities do not want to

address because it would involve raising prickly issues within the community. Finally, setting catch limits restricts the 'hunting' element of fishing and prevents skippers demonstrating their 'skill' as fishermen, which could affect the traditional hierarchy of fishermen in the community.

So why would these fishermen opt for both catch and gear restrictions? Rights to the fishery could be one reason. At the moment, quotas imply a recognition of a history in the fishery and a right to fish. They are, therefore, seen as preferable to no catch limits, which would wipe out their rights as they currently stand. With the high level of feeling about the perceived loss of national management of the fishery and the perception that foreign fishermen are 'stealing' British fish, the possession of quota could impart a feeling of control and involvement in the fishery.

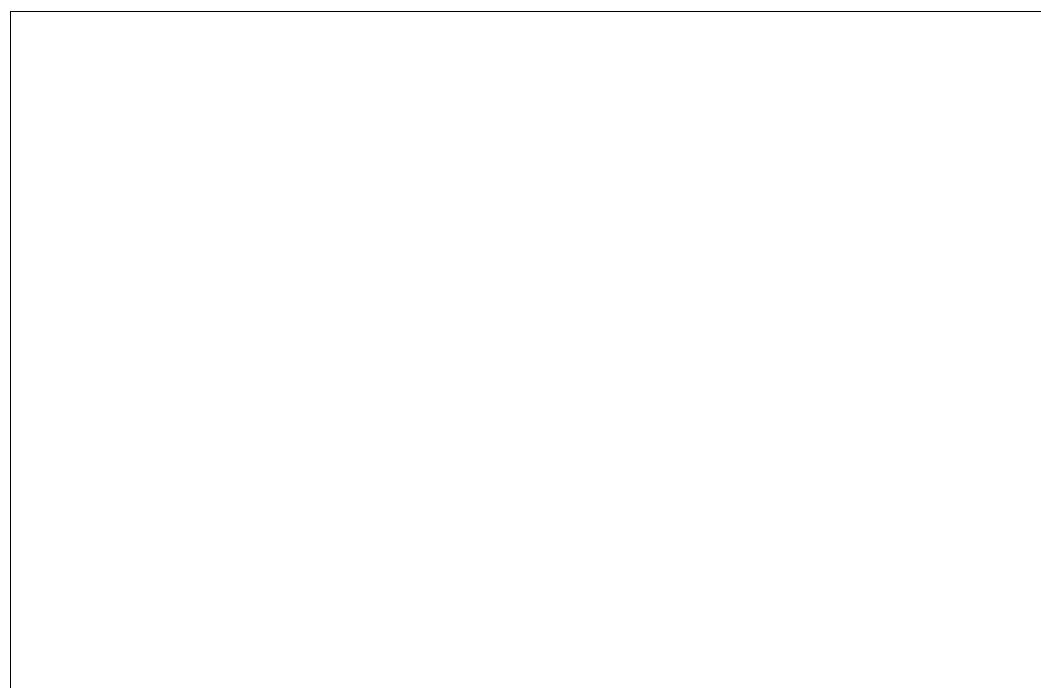
Those fishermen who were members of Producer Organizations (POs) tended to feel more involved in the decision-making process, which certainly supports the view that POs can engender co-management in fisheries. But 92 per cent of fishermen believed that they should have more involvement in the management system. Those who felt they had the least input to the system were the fishermen who were not members of POs (a minority) and those who skippered the smallest boats.

Greater involvement in fisheries management has practical implications involving time commitments that many of the owner-skipper can not afford. More localized management, with a greater degree of control by fishermen, was seen as a way of improving the current quota management system and making the system as a whole more regionally pertinent.

There is still a perceived gap between 'local' and 'national' management: national government is perceived not to react to information sent up the network by local organizations.

Held responsible

Although quotas are set by the UK government, Brussels, a long way culturally and geographically from the



fishing communities, is held responsible for the restrictions applied to the fishermen. Although de-centralizing control and management is not synonymous with co-management, it can help improve the perception of participatory management.

As fisheries regulations have to meet the needs of all users of the resource, the fisheries management system becomes more complex, and requires more information. Its complexity can increase misunderstanding and incomprehension of regulations and information, and contribute to increasing battles against the system by the fishermen. The key to success, however, is to make sure that the burden of information does not become too great—too much (bad) information is often worse than too little information. While policymakers and enforcers have a perception of how fishermen relate to, and with, the management system by which they are bound, this is often at odds with the perception of fishermen.

Fishermen in the UK are probably no more or less law-abiding than their European counterparts and no more mistrusting of their rivals on the fishing grounds. Should research be carried out, it would probably find that the perceptions of UK fishermen about fisheries regulations are no different from those of other Europeans, although, of course, the villains of the piece would

change nationality! While non-compliance is by no means rampant in UK fisheries, things could be better: but this requires compromise by the fishermen and the government. §

This article is by Elizabeth Bennett, a fisheries researcher in the Centre for the Economics and Management of Aquatic Resources (CEMARE) at the University of Portsmouth, UK

Common-property fishing rights

Coastal resources for whom?

As powerful forces seek to industrialize and privatize the world's fish resources, it is time to counter the moves to dispossess coastal fisherfolk

Since the beginning of civilization, fisherfolk of coastal communities have laid claim to adjacent coastal resources. Their perceived rights to local fish stocks derive from the sustained use they have made of them. The importance of these rights has been intensified by the evolved economic dependence of coastal people on their fishery resources. However, it is becoming increasingly clear that coastal communities will be able to maintain their prerogatives of priority access to adjacent fish resources only by a vigorous collective defence of these resources as their common property.

Typically, most inshore fish resources have lent themselves well to harvesting by locally based small-scale fishermen. Their traditional rights to adjacent fish stocks are now threatened by two significant developments. One is the growth in power and ambition of industrial corporations in the fisheries sector. Such corporations have naturally dominated offshore and distant-water fishing operations, because of their ready ability to access the large-scale technology and financing needed for such operations. Now, in their drive for greater market share and enhanced security of raw material supplies, they are also seeking to increase their direct access to resource-rich coastal fisheries.

The second threatening development is the current drive for formalization of access rights to fish resources in a manner compatible with contemporary Western notions of corporate and individual private property. This is increasingly taking the form of attempts to 'privatize' the fisheries by commercializing ownership rights through transferable shares in the fish harvest. Such rights are referred to as 'Individual Transferable Quotas' (ITQs). An underlying objective of

most promoters of ITQs is to ensure the dominance of market forces in arranging access to the fisheries, by allowing unfettered transferability and accumulation of quotas at unrestrained market prices. This has the effect of monetizing access rights at high capital values, thereby favouring corporations and wealthy investors. Using their financial power, they are able to bid up the price of quotas and buy up access rights to large shares of the harvest, either by outright quota ownership or by control through tied loans to individual operators.

The complexity and high cost of managing ITQ systems have made their application in the coastal fisheries of most developing countries impractical at this time. Here the corporate fisheries sector is more likely to impact the small-boat inshore fisheries through the incursions of larger company vessels into inshore waters or through their depletion of stocks that migrate between the inshore and the offshore.

The usual procedure in introducing an ITQ regime is to give a free allocation of perpetual quotas to the owners of currently operating fishing vessels, with the proviso that they (and future owners) have the right to sell these at any price obtainable in the market. The value of a set of quota holdings, even of a small-boat operator, in many fisheries may now run to tens of thousands of US dollars and, in some fisheries, may amount to well in excess of a million dollars.

Strong incentive

Such prices constitute a strong incentive for established fishermen to sell out if they are in an ITQ fishery, particularly if they are close to retirement. If they are in a fishery without transferable rights, they

may be persuaded to have their fishery converted to an ITQ system, so that they may also make a windfall gain when they retire.

ITQ systems are very difficult to dismantle, both for fiscal and political reasons. Once the rights have been traded, the new owners would claim full compensation for the rights they had bought if the government decided that the ITQ or transferable licence regime was not working well and should be abandoned. The fiscal burden might be insupportably high and the political embarrassment would be great. Transferable rights programmes are therefore almost irreversible.

With ITQ systems, it is difficult for crew members on small boats to become, in time, vessel owner-operators, as has been part of the life-cycle pattern in so many fishing communities. The inequitable give-away of transferable rights to particular individuals who happen to be boatowners at the right time will tend to confine access to the fishery to a more select group and their heirs, and thereby create or sharpen class divisions in fishing communities. A further important social and economic concern is that of the geographical concentration of fishery access privileges. This may be achieved through the acquisition or control of ITQs by corporations, which then locate the fishing vessels they own or control at their

base of operations in particular larger centres. This is liable, in time, to destroy the viability of many smaller communities that do not have the financial resources to compete for the purchase of quotas and licences, but that would have remained economically viable if they had continued to have access to their accustomed resource base. This represents a loss of social capital invested in infrastructure and of private capital invested by the inhabitants, who may also find their lives disrupted and their circumstances much reduced.

It is important to recognize clearly the intrinsic nature of a government's move to install an ITQ regime, starting with a free gift of marketable access rights to selected individuals. It is basically the expropriation without compensation of a community's resource base. This may end up with alienation of the resource from the community, and its actual or prospective transfer into the hands of outside corporate or entrepreneurial interests, which may decide to exploit the resource from a distant base. The direct financial value of this confiscation may be measured by the capitalized value of the quota holdings representing the alienated resource.

Privatization of rights

In summary, what does the move to 'privatization' of fishing rights in the form of ITQs and transferable licences really

mean for coastal communities that have been historically dependent on their local fishery base?

It may mean the 'enclosure' of their fishery commons by the authority of a distant government; the confiscation of a fishery resource to which they have had a long-established traditional right; the rupture of a community's social fabric and the sharpening of class and wealth distinctions, with the assignment of windfall gains to some and the loss of access to a master-fisherman's career for others; the prospect of alienation of a vital community resource base to wealthier outside interests; and, finally, the possible decline and eventual abandonment of the community itself.

ITQs are frequently promoted as a device to 'privatize' the fishery. It is asserted that they would abolish the common-property nature of fish stocks, and bring about private ownership of the fishery, with the efficiency advantages that attach to such ownership. This vision is wrong. The notion that ITQs will remove the common-property nature of fish stocks and make the fishery 'just like' other industries is utterly unrealistic. It needs to be realized that fish in the ocean are fugitive and can not be segregated, identified and assigned to different owners. The ecology that nurtures them is the seamless multi-use ocean environment that is common for fishing, recreation, transportation and many other purposes. Fish stocks and the ocean environment that produces them, by their very nature, are common-use and common-property resources. They can not be divided into self-contained and separately managed units to which comprehensively specified private property rights may be attached.

For privatization of the fishery to be substantially complete and to meet the test of economic efficiency, it would be required to give every fishing enterprise exclusive property rights to, and exclusive control over, a particular identified set of fish, along with a particular ecology that produces those fish, in the same way that a farmer owns and controls specific animals and all the productive facilities of the farm necessary to raise and bring those animals to market. It is patently

impossible to operate in such a fashion in the marine fisheries, because of the physically determined common-use nature of the resource.

ITQs do not give property rights to the fish stocks, but only privileged access rights to a pool of fish that quota holders continue to exploit in common. It has been demonstrated that ITQs will often help to rationalize fishing capacity. On the other hand, as shown above, they will also frequently result in distributional inequities. Of further concern is the fact that, in many cases, they are demonstrated to be damaging to fisheries conservation.

In ITQ fisheries, the Total Allowable Catch (TAC) needs to be set firmly at the beginning of a season or fishing period, as participants need to know in advance what their quota (share of the TAC) is. The credibility of the system depends on honouring the set quotas, but sound management requires constant monitoring of stocks, with in-season changes in TACs and fishery closures, according to observed stock conditions. The inflexible TACs of ITQ systems lead to harmful overfishing if they are set too high, or wasteful underfishing if they are set too low.

ITQ systems are notorious for cheating ('quota busting'), with participants taking, but failing to report, catches in excess of quota. Enforcement of quotas is difficult, expensive and, in many fisheries, impossible to achieve. Where enforcement of quotas is reasonably successful, a different problem arises, that of 'high-grading'. In order to maximize income from their (quantitative) quotas, fishers are induced to throw away fish that have a lower value per pound, which often means a significant part of their otherwise saleable catch will be discarded and go to waste. Even worse is the practice of 'price-dumping' in some ITQ fisheries, where the entire catch of a trip is discarded if, on the way back to port, it is found that the day's market price is low.

Forbidden practices

All three of the foregoing practices are usually forbidden in ITQ fisheries, and so perpetrators do not report their transgressions. This leads to 'data fouling', with catch mortality being

under-reported and managers not knowing the full impact of fishing on stocks. The result is inferior stock estimation and greater hazards in setting unreliable quotas at the beginning of the fishing season.

Adding to the problems are mixed-stock fisheries, where it is impossible for vessel operators to catch different species in the same proportions as the quotas given for those species. This also may result in discarding to match catches with quotas, or to quota busting to hide overages.

There is ample evidence to indicate that ITQ systems often can not be reconciled with sound fisheries management and are basically incompatible with the precautionary approach that is now the international standard for responsible fisheries management. While small-scale fishing communities may feel particularly threatened by the damaging social impacts of ITQs, they may find that some of their most effective arguments refer to the adverse conservation impacts of ITQs. This also provides a strong basis for alliance with socially sensitive environmental groups.

In the industrialized countries, small-scale, owner-operated vessels fishing in coastal waters have some important natural advantages over the corporate fisheries sector. Smaller vessels

are generally effective in targeting inshore stocks, and economical in operation close to their local base. With short times at sea and a good holding facility, they can deliver a high-quality, fresh product. The owner-operator of a small boat is greatly motivated to run his vessel efficiently and maintain it carefully.

Provided the small-scale fishery is rationalized to yield attractive revenues per boat and to operate subsidy-free, it is in a position to impress sensitive governments with the social advantages of its relatively high labour intensity, its favourable lifestyle, and its economic and social underpinning of smaller coastal communities. The populations of many fishing communities have grown, while advancing technology has reduced employment opportunities in the fishery, even if partially offset by the greater range of fisheries now pursued. To remain economically healthy, the small-boat sector must accept the need to keep fishing capacity in balance with available harvests. This will probably require occasional reductions in fleet size by buy-back, in order to offset likely advances in fleet productivity.

Developing countries

The plight of small-scale fishing communities in developing countries is often a daunting one. Where population densities are high, open access to the fishery has frequently attracted large

numbers of impoverished, landless workers.

Fishing communities have often become the abode of 'the poorest of the poor'. Intense population pressure, in combination with a lack of government capacity to manage the fisheries and a lack of effective local authority to impose a conservationist discipline, easily leads to overfishing.

In several countries, the desperate need for immediate daily income has caused fishers to engage in 'Malthusian overfishing', employing destructive techniques using dynamite, poison and ultra-small-mesh nets.

In developing countries, the immediate threat to small-scale fisheries often comes from the encroachment on inshore fish stocks by industrial fishing operations. These have often been encouraged by governments anxious to promote industrialization and to develop export industries for high-value species, such as shrimp.

In addition, industrial fisheries and aquaculture operations have been allowed to encroach upon the grounds of small-scale fishers. Lack of fishery management restrictions on these operations often leads to depletion of wild stocks and disease outbreaks in aquaculture.

On the other hand, in some countries, governments have recognized the needs of vulnerable coastal communities, and have moved to protect coastal fisheries by prohibiting larger vessels from fishing near to shore, though enforcement has frequently been ineffective.

The immediate priority of threatened small-scale coastal fishing populations in developing countries has to be the vigorous assertion and defence of traditional rights to adjacent resources, culminating in legal recognition of those rights. No less important, however, is the long-term need to achieve a reform of coastal fisheries that will help to banish damaging fishing practices and produce larger sustainable yields. Experience suggests that community-based co-management approaches may have the best prospects for success. A full solution to the coastal fisheries problem in developing countries will require the provision of job opportunities outside the fishery to draw off surplus labour from the fishery.

Political fashion

Small-scale fishing communities in developed countries have become the victims of the current political fashion for 'privatization'. It is being applied to the fishing industry incorrectly, in the mistaken belief that the common-use and common-property characteristics of marine resources can be suppressed.

The device of the ITQ is being used to this end, on the erroneous assumption that fugitive marine resources can be divided, packaged and assigned to private owners in effectively the same fashion as immobile and captive terrestrial resources.

In some places, much damage has already been done in alienating fishery resources from small-scale fish harvesters and in diverting fish catches from smaller, fishery-dependent communities to larger, industrial centres. Meanwhile, in developing countries, small-scale fish harvesters in many places are losing resources to encroaching industrial fishing and aquaculture operations. The already precarious livelihood of large numbers of fishery-dependent workers and their families is at stake.

Behind the current campaign for 'privatization' of fisheries lies the reality of an assault on the traditional common-property resource rights of vulnerable fishery-dependent populations. Given the clearly adverse impacts of privatization devices such as ITQs, both on social equity and on resource conservation, a strong basis exists for joint action in defence of common-property marine fish resources by groups representing small-scale fish harvesters and environmentalists, both in developing and in industrialized countries. Considering the extensive and near-irreversible damage that is being inflicted by so-called fisheries privatization, there is no time to lose in mounting the defence. ¶

This article is a summary of an extended paper by Parzival Copes, which formed the keynote address at the founding meeting of the World Forum of Fish Harvesters and Fishworkers in New Delhi, on 18 November 1997

Safety at sea

The sea doesn't always win

One wizened veteran reminisces about safety, life and death as men battle the fury of the sea

Young men look forward to life: they can not wait to get on with it. Old men reminisce and philosophize on the meaning of life. It is a sobering thought to have joined the latter.

Looking back to the days when I was at primary school in a small Scottish village, the fishing was a very different industry then. The boats were smaller and featured less mechanization, and much more of the processing was done locally. Most of the boys in that classroom became fishermen, most of the girls married fishermen. That was the way it had been for hundreds of years.

School holidays were an opportunity to get to sea, either on the local small boats hand-line fishing for mackerel or in the larger boats that went to sea overnight to drift-net for herring from the nearby harbour. On weekends, the fishermen would spread out the drift-nets to dry, and we would join in the work, eager to show that we were able to do the work of men. Both my parents came from extended families and there were many cousins of the same age. We were the 'war babies', having been born during the Second World War, which was a fairly recent memory. Our family had been very fortunate during the war. Fishermen had been drafted into the navy and many had the very dangerous job of minesweeping. Most of my uncles were in this category, but all returned safely from the war. Living in a remote village meant that those who remained at home were not subjected to the bombing that happened in the cities further south. None of the immediate families had the horror of having an official telegram delivered advising them of death.

It was against this background that one Sunday morning my uncle came striding

down the street towards our house. Missing was the friendly greeting, the usually humorous banter. It was obvious something was wrong. A quick discussion with my father, and the two of them set off down the road, heading towards the other end of the village, with the long, loping stride that was a family characteristic. Quite a few years passed before the enormity of what they were about to do hit home. They had to tell a young woman that their younger brother, her husband and father of their four children, had drowned.

About the same time, the local lifeboat was lost. It had been called out to assist some local boats into harbour. Manned by local fishermen and volunteers, it became victim to the 'exceptional one', the larger-than-normal wave, the one that rises out of nowhere, approaching at normal speed, and then increasing in height until it is no longer stable and breaks, assuming the speed of a rushing train carrying hundreds of tons of water in a maelstrom of forces. Even large boats fear these waves, while small boats, even lifeboats, succumb to them. The lifeboat in question was dashed up the back of the breakwater and, in sight of the people on shore, the would-be rescuers became the victims. Only one of the eight crew survived.

Tragedy twice

In the following years, Scottish lifeboats were lost on two more occasions, along with most of their crew. Paradoxically, in both cases, the vessels that they set out to save survived. Again, twice, came the full panoply of ceremonial funerals, with whole communities in mourning, and the newspapers crying out with "The Price of Fish" headlines. Small communities were besieged with national newspaper reporters out for a story, and television

cameras seeking footage. The outsiders appeared puzzled, since they were often met with hostility, where usually there was always someone eager to tell a story to a newspaper. Here, this was regarded a private affair. These 'outsiders' did not know the men who died, so why did they have the right to mourn?

Strange enough, it is the odd cases that remain in my mind: Norman had been a fisherman for about 20 years and had fished all around the UK. At home one weekend, he went out in a small dingy off the beach. Less than 100 m from the shore, the dingy capsized, he got entangled in the kelp, and drowned less than a mile from his home.

Alan ventured further afield and became chief engineer on one of the deep-sea trawlers, not a particularly safe job. In the harbour one could expect a reasonable degree of safety, but Alan fell overboard in the dry dock.

Another who didn't drown was a friend, Sandy. He fell in the harbour but was pulled out in minutes. He had inhaled some oil that was floating on the surface and it just frizzled up his lungs. No, he didn't drown, but he died nevertheless.

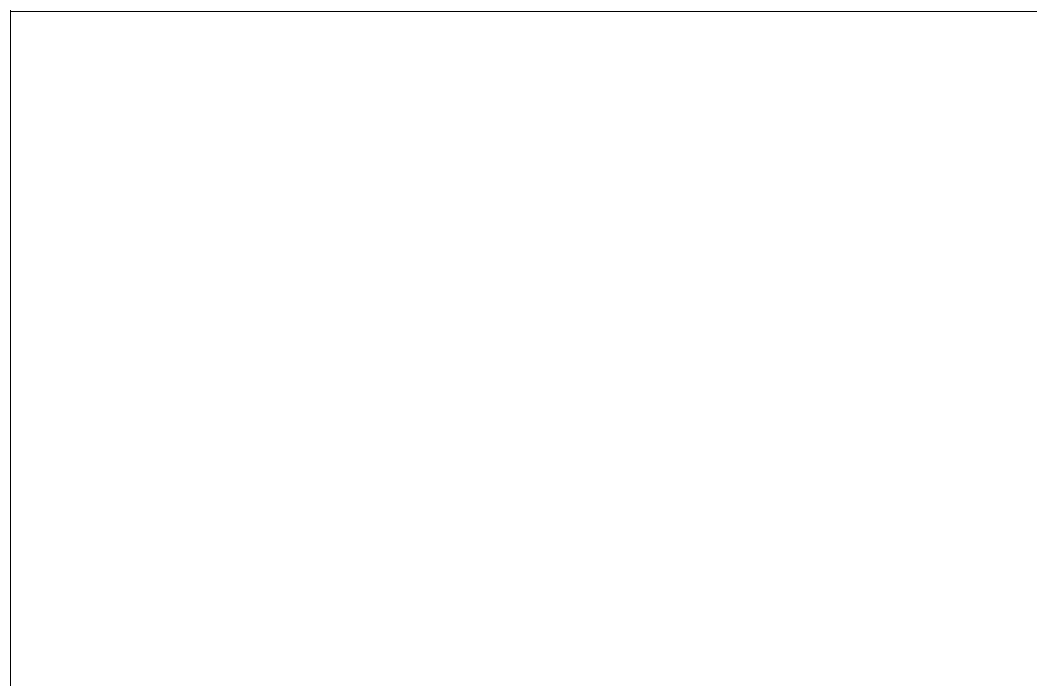
The sea didn't always win. One weekend, a boat went down as she was heading for harbour. She was still about a 100 miles out into the North Sea and the crew took

to the liferaft only after having managed to get a radio message transmitted. This was about the first time that the liferaft had been put to the test, as they were only now replacing the older, unwieldy and leaking wooden lifeboats. All the other fishing boats were already back in harbour, the crew enjoying a well-earned respite on Saturday and Sunday. The news rapidly spread around the town, and the fleet prepared to go to sea again. Not all of the crew could be contacted, so many vessels went to sea with scratch crews—retired fishermen, young boys, etc.

The fleet set sail into the grey North Sea, a ragged trail of boats leaving the harbour, as each boat managed to get enough manpower to sail, heading northeast. All the wireless sets in town were tuned in to the marine channels to catch the discussions between the skippers. This was more interesting than the programmes on BBC. It concerned people whom they knew and could identify with. However, as the fleet went farther and farther from land, the reception got poorer, although within the fleet itself it was still good.

Single line

As the fleet reached the search area, the ragged line of fishing boats transformed itself into a single line abreast, with a distance of 1 mile between each boat. The line swept forward, combing through the



ocean, with lookouts searching for any sign of life. Eventually, the liferaft was sighted—a small orange object, occasionally rising on top of a wave and then disappearing again as it dropped into the trough. Within moments, the crew was pulled aboard one of the fishing boats. The crew had been in the liferaft 24 hours and, twice during that time, the liferaft had been rolled completely over by large waves.

The whole fleet then turned for the harbour, returning with a catch more valuable than fish. The more religious fishermen were singing hymns on the wireless because it was now Sunday. All along the coast, their relatives and friends were attending services in churches and halls, where usually the favourite hymn was “For Those in Peril on the Sea”.

No, the sea didn't always win, but it would always come back for more.

The most common loss of life occurred when a vessel went down without the crew being able to transmit a distress message or to launch a liferaft. There were no Emergency Position Indicating Beacons or satellite communications in those days, and fishing vessels sink remarkably quickly in bad weather. The modern approach is that a vessel does not sink and the crew is lost because one thing goes wrong. It is when a combination of

things goes wrong at the same time and back-up systems don't work that these accidents occur.

The first indication of disaster is when nobody has heard any radio messages for a while. Then, perhaps the boat would not land by the time she was scheduled to. This would lead to an increasing concern, developing into a growing awareness, that, once again, fate had picked out one vessel. As time went on, there would always be some element of desperate hope that, somehow, the boat and crew had survived. But, as the time dragged on, that flicker of hope would be extinguished, and, in place, would come the crushing realization that, once again, the sea had claimed its toll. Often the lamentation would be made much more poignant because there were no bodies to grieve over or to bury.

There is a woman in the village who has lost her husband, her brother and her son in separate accidents at sea. Such vagaries of fate are hard to explain and even harder to bear. Some families are lucky and have few losses.

Close escapes

Of course, every fisherman has the story to tell about the close escape he has had. Most admit to being afraid at the time. As the fisherman poet Peter Buchan wrote, “More often, what appears to be iron will is no more than want of sense”.

I had my close call too. We had set off for the harbour as the weather grew worse, and I was on watch in the wheelhouse with a young teenager. The area we were crossing slowly became shallower, and the sea became rougher along that edge. Though it was only gale force, the choppy sea meant that you always had to be on the alert. Then, one of the waves rose higher than the rest. Not only was it higher than the rest, it was still rising and hadn't yet broken. This was going to be a nasty one — and we were right in its path.

Some of the training that we had hoped never to use came into play — head the boat up into the wave, not too fast or the boat would shoot out over the top of the wave and you would find yourself on a boat in mid-air; and never too slow, which is even worse. If the boat breaches the wave, it will easily roll over. The wave keeps on rising higher and higher, until it starts breaking about 20 m in front of the boat. At this point, you are not looking at the wave but looking up at it — an ugly, greyish, foamy mass rushing forward with the noise and power of a steam engine. As the wave breaks against the wheelhouse, you duck to avoid the shards of glass that would be driven inwards if the wheelhouse windows give way. However, they hold, and the wave rumbles over and is gone.

It seems remarkably quiet, the boat isn't moving so much. The wheelhouse windows haven't cleared, but there is a green light filtering through. As the water falls away, you find your eye is at water level. The whole boat is underwater and only the small part of the wheelhouse is above the water. Gradually, the boat rises, shaking the water off the deck like an old dog. The engine is labouring, as it was never meant to push the whole boat through the water. This is a dangerous time, as even a small wave hitting now could be the knock-out punch. Fishermen generally believe that these waves occur in groups of three and, in fact, scientists now say there is some truth to this. However, that is another story for another day.

This time, we are lucky, and the boat gradually floats on the surface like a boat is supposed to do. However, the deck is in a shambles. The wireless aerials are lying

on the deck washed off the top of the 30-ft mast. Inch-thick oak boards are broken in twos, with the shards speared into the other side.

The crew has to get up on deck to clear the mess. As the teenager and I are in the wheelhouse, we watch the crew tidying up and, at the same time, keep an eye windward for signs of any other wave that might come down. I ask the boy whether he was afraid. He replied "No, I was not afraid, because you were not afraid!" I did not admit to him that I was sitting down after it was all over only because my knees had turned to jelly. ¶

First Person

This piece is by Andrew Smith, Fishery Industry Officer (Gear), FAO, Rome

Safety at sea

The tragedy of official default

Who will save small-scale fishermen lost at sea in what is perhaps the most dangerous of civilian occupations, fishing?

Marine fishing has always been the most dangerous of all civilian occupations, with fatality rates higher than those for workers in other industries. Elements of risk of various sorts and degree are inherent in almost every decision of a skipper or individual fisherman: when and where to go fishing or to run for shelter; what method/gear to use; whether or not to change a fishing spot; when and how to set or haul gear; when and where to land catch, etc.

All these decisions have to be made against a background of weather changes, conditions of boats and equipment, dexterity of crew, and so on, as well as on the skippers' cultural and individual attitudes, experience and skill, and the various economic incentives that exist for risk-taking.

Official national and international attitudes have always focused on large and medium-scale fishing fleets, in spite of the fact that the rate of accidents and casualties at sea among small-scale fisherfolk are even higher than in high-sea fisheries. This is not surprising when one remembers the conditions under which these people fish. Their vessels, safety and communication equipment, first-aid, search-and-rescue (SAR), and early warning services are often less than adequate.

Consider an African example. In Guinea, which has 7,000 artisanal marine fishermen, each year, one in every 15 canoes meets with an accident, and for every 200 registered fishermen (including men and women, fish traders and their families) one dies in a canoe accident. In Oceania, during the 1989-90 period, around 120 deaths in about 640 accidents were reported. To these 'normal'

casualties we must add massive loss of life and equipment in tropical storms (cyclones, typhoons and hurricanes).

In several areas, large vessels act as 'mother ships' for a large number of small boats and their crew, for handlining on relatively distant fishing grounds. The only place where such people can rest, eat and sleep is on the ship's deck. Not only is their food supply usually poor, their safety at sea is also a low priority. There has been at least one case of a canoe with five on board being abandoned by a Portuguese-flag mother ship, leading to two deaths by starvation. Is there anyone supervising the unmotherly practices of such mother ships?

In many countries, as far as technological developments are concerned, the small-scale fishery is no longer synonymous with backwardness and poverty. Modern boats are equipped to operate a great variety of fishing gear over fishing grounds previously inaccessible to small-scale fishermen. Many of such small fishing vessels have many features of larger ones, including relatively heavy engines and deck machinery that make them sinkable as soon as they capsize or take in large amounts of water. This is one unfortunate consequence of progress—boats that stay afloat in case of accidents have saved hundreds of fishermen's lives.

At the other end of the range, in Third World countries, artisanal fishermen still operate traditional fishing gear and craft. In some places, the only progress has been the introduction of synthetics; in others, the last technological improvement was the outboard engine.

Immense progress

In between, in some Third World countries, progress has been immense

with motorized artisanal craft employing a variety of imported fishing methods. The level of working and safety conditions on board depends on the general and local social and technological standards, the economic output of the fishery, and the local cultural attitudes to risk-taking and life-saving.

In the long-standing tradition of artisanal fisheries, fisherfolk have inherited time-proven responses to crises at sea, as well as survival strategies and weather perception that, along with their fishing knowhow, have evolved through ages of operating traditional technology under specific, local conditions. However, in many cases, the introduction of modern technologies has not always been for the better and has often upset the traditional ways of doing things. Forsaking sails and neglecting the art of sailing is only one example. Another is the lack of appreciation of the limits of modern technology and, hence, a tendency to take needless risks. The problem is often compounded by insufficient technical training in operating engines, navigation, use of electronic aids and safety equipment, first aid and emergency behaviour.

The deskilling in traditional knowledge is not only due to the shift to imported technologies, but also to changes in the age composition of the crew. With the entry of many unemployed youth, old,

experienced fishermen, for various reasons, stay more often ashore. Young fishermen, like young drivers, feel less vulnerable to accidents than their elders who, even if less skilled in operating machinery, are more experienced in survival at sea.

On the question of legal instruments, small-scale fisherfolk have little hope for rational regulation, improved SAR services or decent treatment of casualties and damages. There are no internationally agreed rules for safety equipment and construction of small (less than 12 m long) fishing vessels, and for the training and certification of their skippers and crew. Only a few countries ratified the 1993 Protocol to the Torremolinos International Convention on the Safety of Fishing Vessels, that addressed the safety of crew and fishing vessels of over 24 m in length (and nothing below that). Since, for worldwide enforcement, the Convention must be ratified by at least 15 States which have an aggregate 50 per cent of the world's fishing fleet, the Convention remains a 'paper shark'.

Voluntary guidelines

For fishing vessels between 12 m and 24 m in length, there exist the 1980 FAO/ILO/IMO Voluntary Guidelines for the Design, Construction and Equipment of Small Fishing Vessels. But they are hardly applicable to small-scale and artisanal fishing boats. The only

international rule that applies to vessels of any size is a reference in Chapter 5 of the SOLAS convention merely requiring “ships of less than 150 tons gross” to be fitted with a steering compass. And that is almost all there is.

Governments reluctant to ratify and enact international standards on the safety of fishermen on larger vessels, no doubt, are even more reluctant to get involved in new conventions concerning small-scale fisheries, where enforcement would be difficult and costly.

There have been some attempts, though. One is the standard for construction and stability for fishing vessels, also under 15 m in length, jointly produced by the Nordic countries. There is also the FAO/Bay of Bengal Programme (BOBP)’s regional safety programme, spurred into life by the disastrous cyclone which struck the coast of northeast India in 1996. BOBP has published a pertinent and very good Safety Guide for Small Offshore Fishing Boats, and India has a working cyclone warning system, though its end links (to fisherfolk at sea and on the beach) still seem to be rather weak.

FAO also has regional activities for the Caribbean and the Pacific islands. Some governments in the Caribbean region seem to have started a process of enactment and enforcement of prescribed standards for the construction of small fishing vessels. NGO- and internationally-sponsored activities have been reported from Senegal, Guinea, Pacific islands and some other countries.

However, valid national legislation and actual efforts by governments to alleviate risks and dangers among fisherfolk are rather scarce, to say the least, and, if any, have still to achieve success. The NGOs’ activities remain a mere drop in the ocean.

Interestingly enough, countries that lack large-scale fisheries seem to be paying more attention to their small-scale fisheries, than some of the leviathan nations in fisheries. While, for instance, the US’ regulation hardly touches small-scale fisheries, and Japan’s stops at boats of approximately 8 m in length, Barbados, Grenada, Senegal and Israel

have reported regulation of safety equipment and other requirements for smaller fishing boats as well. Whatever be the number of countries that boast safety rules covering small-scale fisherfolk and their boats, the general picture is still grim. As of now, the small-scale fisheries represent a sector whose safety is least taken care of by legislation and enforcement.

In some places, safety gear inspection simply means that fishermen who can not afford the equipment prescribed have to bribe their way out. Another way out is to cheat by borrowing the equipment just for the inspection period. Where fishing licences are required, they are not always stipulated by seaworthiness and safety inspection, or by skippers’ certification.

There are two basic types of SAR services: (1) civilian, often voluntary inshore and even offshore lifeboat services that may be the main ones, or auxiliary to the State’s services, characteristic of some industrial marine countries, (e.g. UK, Australia, New Zealand); and (2) naval, air force, coast guard, special agencies, and marine police units that provide SAR services when necessary to people and vessels in trouble (as in the US, Japan and Israel).

However, fishermen in trouble at sea are mostly found and rescued by their fellow fishermen, not only because of the traditional solidarity (“I help you today, you help me tomorrow”), but also because, in most cases, small-scale fishermen are fishing while in visual or other contact with their fellows, which reduces the rate of fatalities. In many countries, however, there is little preoccupation with fisherfolk’s safety and provision of effective SAR services. The reasons are numerous: insufficient awareness; lack of funds; lack of personnel skilled in marine safety problems or specialized in marine safety and SAR; lack of suitable craft; the huge numbers of fishing units spread over long coastlines and numerous, often remote islands; and inadequate technical and institutional infrastructure; and above all, the lack of political will, to mention a few.

Underestimation

Official statistics tend to underestimate the numbers of fishermen missing at sea.

Public interest is low except in the immediate communities of the missing ones, and the media wakes up to the subject only when the dead become newsworthy because of their huge numbers.

Fisherfolk, as a rule, lack the leverage and lobbying power to influence authorities to deal with, and invest money and efforts in, improving their safety. Preoccupied with their daily struggle for survival, their political action, if any, would be targeted at their immediate economic problems. Unquestionably, the great majority of the world's small-scale fisherfolk have been left to their own designs and their own means, as far as their safety at sea and on the beach goes, with efficient SAR services confined to industrialized countries.

The safety of the world's 15-20 million male and female small-scale and artisanal fishermen who produce about half of the world's fish for human consumption have yet to attract adequate national and international attention. What prevails is the tragedy of official default to legislate, enact and implement rules and regulations, to train and educate, and to fund services essential for reducing casualties and fatalities among the small-scale fisherfolk.

So, what is to be done? Two basic strategies should be applied: (i) reduce the consequences of accidents; and (ii)

prevent accidents. The first has to do with SAR, safety equipment on board, emergency communication systems, and skipper and crew performance in case of emergency.

The second is mainly about boat design and construction quality, stability, training and licensing of personnel, working weather warning systems, as well as the reduction of sociocultural and economic incentives to take risks.

Countries which do not have their own design and construction standards for small-scale fishing craft should have them worked out by international and inter-governmental bodies, and use them as a basis for their own regulation and enforcement.

Artisanal craft locally built by traditional design and construction methods can be improved without changing the overall character of the craft. In artisanal and other small fishing craft, for example, designing for buoyancy to cope with capsizing or flooding and, where possible, for the opportunity of righting the boat by swimming crew, represents an important prerequisite.

Local institutions

Where governments are not effective in other public services too, Western-type voluntary and State-run SAR programmes would wither soon after expatriate expertise and external funding terminate.

One solution, therefore, is to identify local, traditional institutions, and local leadership that, with some support of NGOs and international organizations, would organize their own SAR and storm-safety services, and other related projects. Another option is to keep the external support going for as long as necessary.

For safety standards and regulation, the economic situation of the fisherfolk and their preferences, as well as the availability of materials, and general technological levels and infrastructure must be taken into consideration through involvement of their representatives in the process.

Training and education are of paramount importance, and can be applied by nationally and internationally initiated and locally executed courses, seminars and workshops, including itinerant, regionally adapted well-equipped courses for training trainers, SAR activists, extension workers and skippers.

For things to happen, however, fishworkers must exert more political pressure, and develop activities addressed at public opinion.

For this purpose, they must organize locally, nationally, regionally and internationally. 3

This article is by Menakhem Ben-Yami, Fisheries Development and Management Adviser, Kiryat Tiv'on, Israel (email: benyami@shani.net)

Hurricane warning

Hurricane preparedness for the fisheries sector in the Caribbean Islands is not uniformly strong

A hurricane is a warm-core tropical cyclone in which the maximum sustained surface wind is 74 mph (or 119 kph). The term hurricane is used for Northern Hemisphere cyclones east of the International Date Line to the Greenwich Meridian.

A hurricane's spiralling bands of winds and rain can extend hundreds of miles from the calm eye. Besides strong winds and heavy rains, storm surges as high as 20 ft (6 m) and flooding of low-lying coastal areas accompany hurricanes. Although the 'hurricane season' in the Caribbean extends from 1 June to 30 November, according to historical records (1885-1996), most storms occur in August, September and October.

Hurricanes are classified in terms of their intensity which reflects the amount of damage they may cause. Forecasters rate the severity of hurricanes using the Saffir-Simpson Hurricane Scale of 1 to 5, with five being the strongest.

Category	Wind Speed (mph)	Storm surge (ft)	Damage
1	74-95	4-5	Low
2	96-110	6-8	Moderate
3	111-130	9-12	Extensive
4	131-155	13-18	Extreme
5	> 155	> 18	Catastrophc

Table I. Classification of Atlantic Hurricanes

The National Hurricane Centre in Florida, US, maintains a continuous watch on tropical cyclones over the Atlantic, the Caribbean, Gulf of Mexico and the Eastern Pacific from 15 May to 30 November, and issues watches, warnings, forecasts and analysis of hazardous weather conditions.

Agriculture, forestry and fisheries are important economic activities in the Caribbean islands, even in those islands where their contribution to the GDP is small. These sectors are critical to foreign exchange, rural and coastal development, food supply and security, employment and culture. They are, however, vulnerable to hurricanes, storms and other rough sea events.

In the Small Island Developing States (SIDS) of the Caribbean, vulnerability is accentuated by smallness of size, to the extent that a single disaster may entirely cripple an economy and society for a considerable period. Evidence is provided by the recurrent requests to FAO for emergency assistance to rehabilitate the agriculture sector and to strengthen both national and regional capacities to cope with disasters due, in particular, to hurricanes.

Measures for preparedness, impact mitigation and management of the effects of hurricanes must be based on regional, national and community-level capacities to plan for, and respond to, such emergencies. Currently, the governments of Antigua and Barbuda, Barbados, Dominica, Grenada, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, and Trinidad and Tobago are receiving FAO's technical assistance in formulating national action plans and mitigation measures to deal with the threats posed by hurricanes to agriculture, forestry and fisheries.

Estimated damage

Estimated damages to the fisheries sector in some Caribbean SIDS by recent Atlantic hurricanes are given in Table II. It should be pointed out that, since 1985, there has been no loss of life of fishers at sea, even though 640 deaths due to hurricanes were

Table II. Damage Estimates of Recent Atlantic Hurricanes to the Fisheries Sector in Some Caribbean Islands

Island	Population	Land Area (sq. km)	No. of fishers	Hurricane category	Date	Damage estimates
Dominica	78,000	750	1,700	Iris - 1 Luis-4 Marilyn- 2-3	22 Aug/4 Sep 1995 27 Aug/11 Sep 1995 12/22 Sep 1995	Damage to landing sites and boats; loss of boats, engines & gear; loss of earnings. Total financial loss of fishing effort us\$1.4 million
Antigua & Barbuda	80,000	442	1,200	Luis - 4	27 Aug/11 Sep 1995	34 vessels destroyed; 79 severely damaged; 6 lost at sea; 11,000 fish traps lost; 5 long lines lost; damage to onshore infrastructure. Total us\$ 1.6 million.
St. Kitts/ Nevis	46,000	360	850	Luis - 4	27 Aug/11 Sep 1995	Total agriculture sector damage us\$ 14.3 million. 12 boats damaged; 2,247 fish traps lost. 350 fishers affected. Damage to fisheries sector us\$ 82 million
Antigua & Barbuda	80,000	442	1,200	Georges - 4	20-21 Sep 1998	1 vessel destroyed. 1 lost at sea; 18 severely damaged; 11,017 fish traps lost; damage to onshore infrastructure; Total us\$ 1.3 million
St. Kitts/ Nevis	46,000	262	850	Georges - 4	20-21 Sep 1998	Total agriculture sector damage us\$ 10.9 million. 120 fishers affected; 10 boats damaged; 1500 fish traps lost. Damage to fisheries sector us\$ 25 million

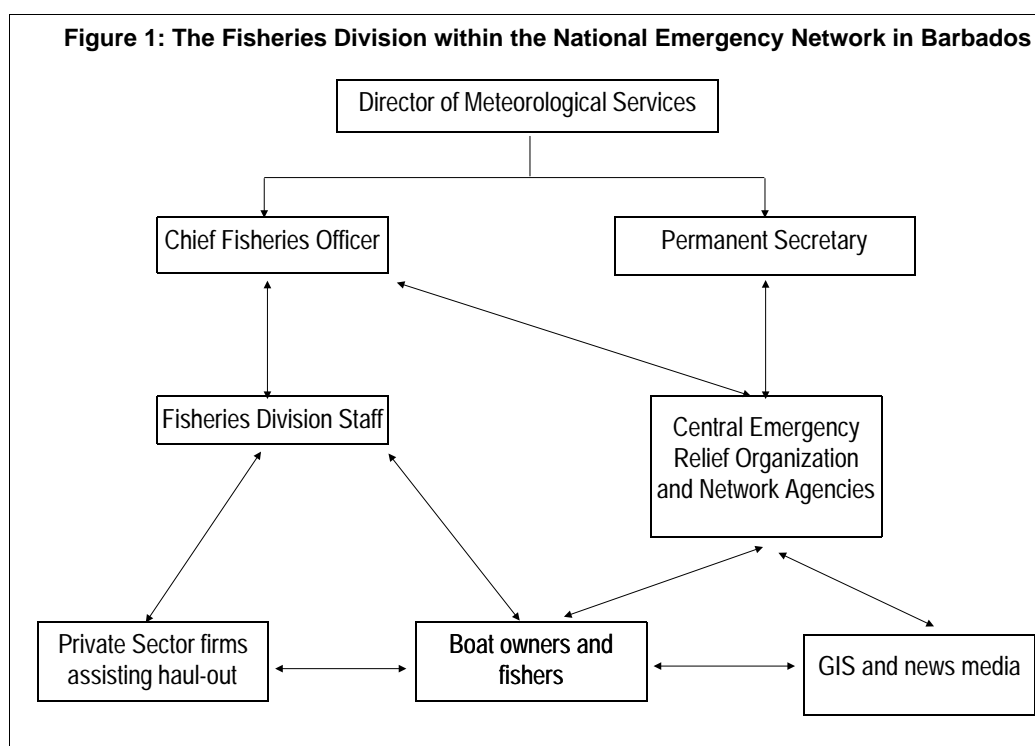
Source: FAO 1998

recorded between 1985 and 1998. The early warning system in place, where advisories are provided in stages depending on the level of certainty with which the weather system approaches the particular locality, has contributed to preparedness.

There is a 'Bulletin', then an 'Advisory', then a 'Watch', and finally a 'Warning'. A 36-hour notice is usually given to the public explaining where the 'eye' of the hurricane is expected to make landfall and the area the gale force winds would affect. However, damages to landing sites, boats, loss of gear and engines have been

extensive, although the early warning system is in place. From Table II it can be observed that most of the fishing gear lost are fish traps/pots constructed from galvanised chicken wire. The size and bulk of the fish traps, compared to the size of vessels and deck space, has restricted fishers from retrieving them before a storm strikes, so only a few traps can be retrieved per trip.

In addition, the distances to fishing grounds, in some islands, are significant. On average, most artisanal fishers deploy about 75 to 100 traps. When the trap is lost, it may still continue to fish for 9 to 12



months, that is, until the wire mesh corrodes enough to collapse the trap. This type of fishing is called 'ghost fishing'.

To address this problem, attempts have been made to introduce biodegradable material panels in fish traps, collapsible fish traps held in the fishing mode by biodegradable cord, and methods of anchoring traps to prevent loss due to strong currents and undersea surges generated by hurricanes and storms.

It appears that most fishers do not activate their disaster preparedness plan until the Advisory becomes a Watch or a Warning. This effectively leads to a level of haste and unpreparedness. This late action, which could be understandable from an economic point of view, constrains fishers from activating their safest response.

However, from Table II, it can be observed that the 1998 estimated loss in the fisheries sector for the islands of Antigua & Barbuda and St. Kitts/Nevis was less than the 1995 estimate. This could be attributed to an improvement in preparedness and awareness.

Each Island country has a national co-ordinating agency for disaster preparedness. In Barbados, for example, it is called CERO (Central Emergency Relief

Organization), in Grenada it is known as NERO (National Emergency Relief Organization) and in the US Virgin Islands it is known as the VITEMA (Virgin Islands Territorial Emergency Management Agency).

The publication, *How to Prepare Your Vessel to Survive a Hurricane in the US Virgin Islands*, produced by VITEMA, while aimed at recreational crafts at that location, contains information relevant to vessels in other parts of the Caribbean. It states that "there are five main elements to hurricane survival: safe harbour, careful preparation, proper anchoring gear, adequate knowledge on how to deploy the anchor gear effectively, and luck. The publication admits that a vessel's chances of surviving a direct hit by a hurricane are slim.

Agencies responsible

The line agency responsible for fisheries (namely, the Fisheries Divisions/ Departments) are directly responsible for safeguarding the fishing fleet and for responding to the fishing community in the event of a disaster. To do this, the fisheries division interacts and communicates with a number of other agencies in the national co-ordinating agency's network and the private sector. A simplified illustration of these relationships in Barbados is in Figure 1.

At the ministerial level there is co-ordination between ministries and their statutory bodies through various National Committees. The fisheries division is usually represented in some of the Committees. NGOs, such as amateur radio and citizens' band radio operators, and the Red Cross, are also linked to the national emergency network. At the regional level, co-ordination is achieved through the Caribbean Disaster Relief Organization (CDERA).

In most islands, the national disaster co-ordinating agency publishes a set of 'Mobilization Procedures' which outlines the functions of the fisheries division and other organizations in its network, at different stages of preparedness and response. The responsibility of the fisheries divisions usually includes fishing vessels, gear and equipment, but does not include the broader issues of food security and emergency funding. It should be pointed out that in most countries no funds are specifically allocated in the annual budget of the fisheries divisions for disaster preparedness. Funds are usually derived from general operating expenses, and maintenance or rental of property.

Most fisheries divisions follow an annual cycle of hurricane preparedness. The cycle of hurricane preparedness for Barbados is shown in Table III.

Jan	Period of relative inactivity
Feb	
Mar	Pre-season servicing of equipment; procuring of supplies for hurricane season; Formulation of hurricane preparedness plan
Apr	
May	
Jun	Preparedness exercises and tests; maintain state of preparedness
Jul	
Aug	
Sep	
Oct	Hurricane season evaluation
Nov	Post-season servicing of equipment
Dec	

Table III: The Annual Cycle of Hurricane Preparedness in Barbados

In addition to safeguarding the fishing fleet, the hurricane preparedness plans usually contains measures, and allocates staff to secure property and records of the fisheries division as required of all government offices.

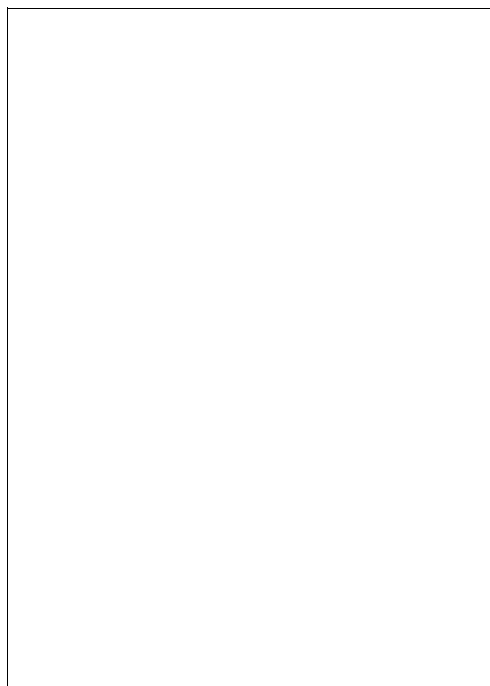
In most islands, a VHF radio network system designed to provide day-to-day link within the fleet and ship-to-shore linkage are in place. In some islands, such as Grenada and St. Lucia, the fisheries division is responsible for maintaining the Network.

An important feature of the VHF radio network in Grenada is a 'phone-patch' maintained for channelling, twice daily, weather reports to the fishing community, one around 06.00 hrs and the other at 18.00 hrs, approximately. This phone-patch is maintained at the home of a fishing technologist. A private operator (Vega One) also maintains a daily weather system. The phone-patch of the Fisheries Division merely relays reports from the Meteorological Office, while the private operator interprets weather reports sourced elsewhere.

The communication of preparedness information to the fishing industry and general public is done through different media. In addition to pamphlets, posters and hand-outs, communication with the fishing industry on preparedness has been through:

- call-in radio programmes;
- special hurricane supplements in the newspapers;
- lectures organized by the fisheries division or the national emergency agency;
- brief informative spots on television; and
- word of mouth from extension officers and others.

Despite the variety of delivery formats and methods, there is the general perception that people in the fishing industry are not adequately prepared for hurricanes. The degree of preparedness is, as expected, higher in islands such as



Antigua and Barbuda, and St. Kitts and Nevis, which have recently (1995, 1998) experienced hurricanes than in islands such as Barbados and Grenada which experienced tropical storms about ten years ago.

Generally, boatowners and fishers were aware of the fisheries divisions' preparedness plans, and most knew what they wished to do in the event of a hurricane or rough seas. However, few had actually written down instructions, made arrangements with colleagues for assistance or practised their course of action to determine feasibility.

Governments of the region, through the national disaster co-ordinating agencies and the fisheries divisions, should improve current efforts at hurricane preparedness in order to further diminish the loss and damage due to hurricanes, storms and rough sea events, through the following:

- Elaboration of a more comprehensive disaster preparedness plan for the fishing industry. The plan must include measures to promote greater preparedness in order to minimize damage to the capital stock of the fishing industry, including fishing traps. The use of coastal space for securing boats, emergency funding and the post-harvest

sector should also be addressed in the plan

- Where it does not exist, a VHF or HF bands radio network should be put in place to provide weather advisory bulletins and ship to shore linkages;
- A programme of public education and training for fishers and the fishing community should be organized to generate more awareness of the fisheries sector disaster-preparedness plan, and for the preparation of an individual written plan, which should be practised every year;
- Allocation of funds annually for disaster preparedness and simulation exercises to fine-tune the fisheries sector disaster-preparedness plan;
- Integration of fisherfolk organizations and fishing communities into the preparedness plans; and
- A group vessel insurance scheme for fishing vessels should be put in place. A regional insurance scheme is recommended in order to generate numbers so as to minimize insurance costs.

A loan scheme, through development banks or fisher organizations, to be used in times of disasters for the replacement of the productive capacity (boats and gear) of fishers. ¶

This article is by Bisessar Chakalall, Regional Fisheries Officer, FAO Sub-Regional Office for the Caribbean, Bridgetown, Barbados

Web-based information

Safely in the net

The World Wide Web on the Internet is a useful source of information on various issues dealing with safety at sea

Commercial fishing is one of the most hazardous occupations in the world, as borne out by the contents of almost all the websites on the Internet relating to fisheries and occupational safety. In the US, among the most advanced nations in terms of technology and safety, commercial fishing is the single most dangerous profession, according to (http://www.cdc.gov/niosh/97163_58.html). The death rate for commercial fishermen in the US in 1998 was 179 per 100,000 workers. This is 16 times higher than the rate for protective service occupations such as fire fighting and policing, and almost 8 times higher than the death rate for persons operating motor vehicles on land for a living.

In the UK, according to <http://www.shipping.detr.gov.uk/fvs/> during 1995-96 there were 77 fatal injuries per 100,000 fishermen, compared to 23.2 per 100,000 employees in the mining and quarrying industry, the next highest category reported that year. There have been no improvements over the past six years. In 1992, from a fleet of 10,953 vessels, 494 fishing vessel accidents were reported. Five years later, in 1997, the accident figure was 485, from a significantly reduced fleet of 7,779 vessels. These statistics do not include personal accidents to fishermen while at sea: it is believed that these are under-reported.

In the developed nations, improvements in safety awareness and legislation, along with satellite and new communication technologies, have led to a decrease in the number of accidents and loss of life at sea. With technological advances, the search-and-rescue operations are also getting more accurate and effective.

In temperate countries, the fishermen at greatest risk of death are those who

operate aboard badly maintained or unstable vessels, and those who have insufficient training in onboard safety, especially regarding cold-water survival techniques and the use of lifesaving equipment. The National Institute of Occupational Safety (NIOSH <http://www.cdc.gov/niosh/pubs.html>) reports that prolonged work hours, adverse weather, and other environmental conditions are important factors contributing to the dangerous nature of fishing. Workers aboard processor vessels also face substantial workplace hazards such as exposure to hazardous equipment and extended work hours.

In most of Asia, the sea is rough during the monsoons, and the small fishing vessels usually do not carry sufficient lifesaving or communication equipment. Whatever equipment is carried on board generally does not meet the basic minimum requirements needed in times of crisis. For many of the developing countries, reliable figures for accidents and casualties are not available. This glaring paucity of reliable data on safety of fishermen at sea is reflected on the Internet too.

In 1977, the first international convention dealing with the safety of fishing vessels, the Torremolinos Convention of the International Maritime Organization (IMO-<http://www.imo.org>), was signed by 45 countries. The Convention sets out a safety regime for fishing vessels over 24 m in length. However, since not enough signatories ratified the convention, it never entered into force.

Significantly amended

In 1993, through a Protocol, the Convention was significantly amended to raise consensus among the IMO member States. The European Commission

Directive, through its Council Directive 97/70/EC, which came into force on 1 January 1999, harmonizes the safety standards in the EU region for fishing vessels over 24 m long. It must be noted, however, that most of the world's fishermen operate vessels which are less than 24 m in length.

The Marine Coast Guard Agency of the UK has put up a very useful document discussing and analyzing the Directive at <http://www.mcagency.org.uk/consult/fv99rial.pdf>.

One of the most comprehensive websites on marine boating safety is that of the US Coast Guard at <http://www.uscg.mil>. The news page of the US Coast Guard's Office of Boating Safety claims that every day it saves 16 lives, assists another 361 people and saves \$2.5 million in property. The Canadian Coast Guard's site—<http://www.ccg-gcc.gc.ca>—is as comprehensive, and its national newsletter can be accessed at http://www.ccg-gcc.gc.ca/echo/111296/111296_1e.htm. Both the Canadian and US sites lack sufficient data on safety of fishermen at sea, as recreational boating safety gets more attention than fishing vessel safety. The US Coast Guard's Fishing Vessel Casualty Task Force Report published in April 1999 is a well-produced report on safety of fishing vessels. It is downloadable in zipped Word 97, HTML

as well as PDF formats from <http://www.uscg.mil/hq/g-m/moa/docs/fishing.htm/>. For hard copies, send an email to fldr-G-MOA@comdt.uscg.mil or write to the Commandant (G-MOA), United States Coast Guard Headquarters, 2100 2nd St. SW, Washington, DC 20593-0001.

The website of the Department of the Environment, Transport and the Regions (DETR), UK (<http://www.shipping.detr.gov.uk/fvs/>) carries a brief of a consultation paper on fishing vessel safety. The Hawaii Commercial Fishing Vessel Casualty Statistics for 1993-1997, published in May 1999, can be found at <http://www.aloha.net/~msohono/fishvsl/fishrpt.pdf>.

Various private firms offer numerous online boating safety courses on the Internet. These courses are approved by the US National Association of Boating Law Administration and recognized by the US Coast Guard. One such site is <http://www.boatus.com>. Apart from receiving all study materials, on successful completion of the course (with a score of 80 per cent or better), you can request a certificate to be sent to you or you can print out the certificate yourself!

Risks of divers

Another topic under safety at sea is the safety and health risks of divers. The risks facing scallop and abalone divers from

Warding off evil

Since prehistory, people have employed protective devices—however ephemeral they may have appeared—to give them an edge over the spirits of the sea. Vessels from Christian lands carry offerings to the Virgin Mary or to any of several saints; individual sailors wear medals or lucky charms.

Micronesians place ornaments in the bows of their canoes—they may be no more than decorated planks of wood—to ward off bad weather, to guide them across the trackless ocean, and to defend them against their enemies. Inuit hunters sew amulets in their clothing and protect precious charms with waterproof pouches.

There are things not to do, as well, to avoid failure or calamity: Don't carry an umbrella aboard a boat; don't change the name of a vessel; don't open a hatch while at sea. In

Scotland and Ireland, don't wear clothes dyed with colors made from sea plants, for the sea will want to reclaim them. In Newfoundland, don't keep the first fish of the day. Spit on it and throw it back, and you will be assured of good fishing.


I remember being in the Turks and Caicos Islands years ago, and finding a tiny 18th-century figurine amid some shipwreck debris. I wanted to bring it home, but our captain's wife, a Bermudan, insisted that I throw it overboard before we set sail. "It sank one ship," she said, "and I won't be party to its sinking another."

—Quote from Peter Benchley at http://seawifs.gsfc.nasa.gov/OCEAN_PLANET/HTML/ocean_planet_book_seafaring_intro.html

decompression are the same as those that face other deep-sea divers. Divers with limb bend decompression sickness have been found to be more prone to bone necrosis in the limbs. Brain lesion is another possible risk associated with decompression sickness. The website at <http://www.diversalertnetwork.org/> provides up-to-date information on issues of common concern to the diving community.

The MARIS (MARitime Information Society: <http://www.maris.int>) initiative of the G8 countries is an ambitious initiative in information technology, which aims, among other things, to develop advanced navigational tools for waterborne transport systems, to ensure safety at sea and to avoid hazards to the environment. The Electronic Chart Display and Information Systems (ECDIS) of MARIS aims to produce electronic navigation chart data in accordance with international standards adopted by the International Maritime Organization (IMO) and the International Hydrographic Organization (<http://www.shom.fr/ohi/iho.html>). MARIS also aims to provide online weather forecasts, alerts and warnings. These advanced technologies will be used onboard all seagoing vessels, including fishing vessels, and they are expected to improve safety at sea as well as help in search-and-rescue operations.

The site http://www.maris.int/proceed/chevr_en.htm carries an article that outlines the possibilities and expectations of the marine fisheries sector from MARIS.

The homepage of the Network of Rescue Coordination Centres is at <http://www.rcc-net.org/>. It is designed as a forum for aeronautical and maritime search-and-rescue topics. The website at <http://www.rcc-net.org/rcc/index.htm/> provides links to the aeronautical and maritime rescue co-ordination centre links of 17 countries. The site at <http://www.rcc-net.org/rcc/sarlinks.htm> gives links to an assorted list of search-and-rescue links, many of which operate with the assistance of aerospace technology and satellites. A comprehensive list of links to the lifeboat services of the world is at <http://www.sea-rescue.de/services.html>. 

This article has been written by Omkar G. Krishnan of ICSF's Documentation Centre

Stretching our fish stocks

Expanding price-inelastic demand is stretching fisheries resources to the limit, while business is booming, despite overinvestment and stock depletion

There is a basic contradiction in today's fisheries. Despite serious overfishing and stock depletion, and despite considerable overinvestment in fish-catching capacity, fishing enterprises remain profitable. A recent FAO report notes that worldwide, 60-70 per cent of stocks require urgent intervention to control or reduce fishing effort to avoid further decline of fully exploited and overfished resources and to rebuild depleted stocks. Nonetheless, the report notes, in spite of fully and sometimes overexploited fishery resources, most marine capture fisheries are economically and financially viable.

Reports from individual fisheries confirm FAO's global assessment of fish stocks and fishery trends: the gradual degradation of stocks is invariably followed by their sudden collapse. In the 1950s and 1960s the development of the industrialized countries' fishing fleets led to overexploitation of demersal fish resources in the North Atlantic and North Pacific fishing grounds.

During the 1970s and the 1980s, the South Atlantic and Pacific fisheries have been exploited with increasing effort by fleets of industrialized countries, operating under fishery agreements from 1983, and by the fast-growing fleets of the coastal States. Thus, in 1975, 60 per cent of the fish catch was taken in the North, while in 1993, 60 per cent of the catch was taken in the South. The transfer of surplus fisheries capital from the North to the South is also noted by FAO: "Excessive fishing capacity is largely responsible for the global degradation of marine fishery resources.... when removing surplus vessels from one fishery, care must be taken that those vessels are not transferred to fisheries where they create overcapacity." Over the past years, vessels that were taken out of

the markets in industrialized countries were often transferred to developing countries with already overfished resources.

In the case of Namibia, stocks were heavily overfished by distant-water fleets (mainly from Europe) until 1989. In spite of almost a decade of restrictive catch management, stocks have not yet recovered fully there. Demersal stocks in Morocco, Mauritania and Senegal are reaching critically low levels, and pelagic resources there have recently been targeted in earnest. The waters off southern Chile were badly overexploited in the 1980s, while fishery yields in Argentina's EEZ have been declining lately, culminating with the unexpected closure of the hake fishery in June 1999.

Stock degradation is the end result of a number of contributory factors, including subsidies, ever-improving techniques (for locating, catching, handling and storing fish), persistently weak policies for fishery management and regulation (monitoring, control and surveillance—MCS) in the coastal States, and favourable price trends. However, despite the degradation of the resource base, the fishing industries still seem to be doing not badly at all.

This article examines this surprising fact by looking at factors that affect the relationship between supply and demand.

Price inelasticity

Given that world demand today is price-inelastic (as defined in the box below), and given that increasing populations and rising per capita incomes in real terms are coming up against stagnant, or even dwindling, supplies from all major fisheries, supply and

Price elasticity

The extent to which demand for fish expands is determined by increases in population and per capita income in real terms, combined with price developments of close substitutes (i.e. meats), as in the case of most other commodities. Fluctuations in supply or basic demand causing 'over- or undersupply' are generally compensated for by falling or rising prices in the market.

This market-clearing reaction is commonly measured as the 'own price elasticity of demand'. This is defined as the ratio of percentage demand adjustment to respective percentage price adjustment.

To give an example: a 6 per cent demand increase (+6 per cent demand change) caused by a 10 per cent decrease in price

(-10 per cent price change)—with due allowance for the influence of other factors—yields a coefficient of 'own price elasticity' of $+6\%/-10\% = -0.60$.

Any elasticity coefficient between 0 and 1 implies that an 'undersupply' is overcompensated by the associated price rise in terms of revenue to the suppliers. So, given an aggregate price-inelastic world demand (expanding to that because of growing population and real per capita income), the fishing fleets would fare better financially by restraining capacities or effort. Simultaneously, of course, the extent of worldwide overfishing would be curbed.

The reality is somewhat different, of course, with every country pursuing its own ends.

demand factors may be having the strongest impacts on price and profit incentives for the fishing fleets. In other words, due to deficient MCS policies, demand dynamics are tending to push global fishing effort beyond MSY (Maximum Sustainable Yield) levels and technical progress linked to capacity/effort-bolstering subsidies are encouraging the process.

Thus, to a large extent, degradation of the world's fisheries is being caused by demand, be it local, export-generated, through fishery agreements, or a mix of the three. For example, in Asia, the US and Europe, local inland demand is the main cause of degradation. In Africa, it is fishery agreements, while in a few Latin American countries, export earnings determine the extent of degradation.

Recent experience in the coastal fisheries of many countries bear witness to this—notably off southern Chile; in the demersal fisheries of Senegal, Mauritania and Morocco; in the cephalopod fisheries of Mauritania and Morocco; and in the Nile perch fishery of Lake Victoria. Since the late 1980s, yields from the Argentine hake fishery have been declining, and the fishery was closed in June 1999 (see SAMUDRA Report No. 20, page 3), well before expert opinion had predicted this. Recent rises in world market prices have caused substantial increases in fishing

effort to target shoaling pelagic stocks off the West coast of Africa, probably way beyond MSY levels.

The process of degradation of individual fisheries typically follows three phases. In Phase I, a hitherto 'undeveloped' fishery is integrated into the market either by developments in infrastructure, the fish processing industry, market links or by fishery agreements. The first private sector investments produce fabulous returns due to expanding demand and access to untapped resources.

This is followed by a second phase of an exaggerated surge of investment and reflagged fishing capacity. Overfishing results, and declines in both catch per unit effort (CPUE) and physical fishery yields ensue.

Meanwhile, processing and marketing enterprises are forced to pay higher producer prices as they, saddled with assets, have to compete for the dwindling quantity of fish. Price increments are, to a minor degree, handed down the transformation chain, and, in the main, they are financed by shrinking profit margins and/or subsidies.

Rising prices

Rising producer prices and subsidies enable fishing effort to be maintained for a while because they compensate, or overcompensate, for the decline in

physical yields. The collapse of the fishery occurs as soon as the production chain (catching-processing-marketing) is no longer financially viable in the market where tough competition rules—i.e. depending on respective transformation costs, the world market has a regulating effect on local prices. In some cases, adverse oceanographic conditions may curb fishery yields, thereby precipitating the event.

In Phase III, economic and social pressures caused by actual and impending bankruptcies trigger the predictable political and financial responses, while redundancies activate the trade unions.

Although fishing capacity and effort decline, increasing subsidies and tax concessions maintain them at a level that makes the regeneration of fish stocks and economically rational fishery management very difficult. A permanent state of overfishing results, with subsidies, tax concessions, remaining overcapacities and more stringent MCS measures stabilizing a socially, economically and ecologically unsatisfactory solution. There is then the danger of such 'chronically' overfished stocks collapsing completely if unfavourable oceanographic conditions intervene on top of all these factors. There are plenty of well-documented examples of such events (e.g. herring, pilchard, anchovies, wild salmon, cod and halibut fisheries).

Where foreign fishing fleets take an appreciable portion of the total yield by way of agreements, the course of events would be different: agreements are quite simply not extended at the end of Phase II because yields no longer cover costs.

World production from capture fisheries at present consists of 60 million tonnes (MT) of high- and medium-quality fish and 30 MT of industrial fish. A further 30 MT of fish is produced from aquaculture.

There is an estimated 40 per cent catching overcapacity worldwide (i.e. about 60 per cent of total capacity of the current world fishing fleet would be required to account for the 90 MT of wild fish caught from the seas). All kinds of subsidies have worked towards this situation: fuel and

investment subsidies, outflagging support (e.g. vessel transfers), compensation payments for fishery agreements, and import protection. This has led to a situation where the estimated annual costs of running the global fishing fleet amount to more than one-and-a-half times the estimated revenues.

Fish is a very heterogeneous product group in qualitative as well as price terms. At least four quality categories can be identified in a preliminary breakdown:

- small shoaling pelagics: in the North this product category is mostly used as industrial fish to produce fishmeal, but in the South it is in greatest demand among poor people (as food). Producer price levels are DM0.40 to 0.50/kg (US\$0.15-0.20). Although real prices have declined over the last 20 years, there has been a strong increase since 1998;
- shrimps and salmon (from marine catches and aquaculture production). Wholesale prices range from DM8 to 15/kg (US\$ 3.5-7.0). In the last 10 years, prices in real terms have fallen by 60 per cent;
- high-quality demersal fish (e.g. cod, haddock, hake, ling, redfish and similar white-fleshed fish). Producer price levels range from DM1 to 3/kg (US\$ 0.45-1.50), with wholesale prices three times as high. Over the last 20 years, price trends were slightly positive in real terms;
- luxury category (e.g. tuna, halibut, crayfish, lobster). Some species show very high and volatile prices, e.g. ex-producer prices for certain tuna species are as high as DM60/kg (US\$ 27.00).

Real price trends

With the exceptions of industrial fish and fish from aquaculture, and compared to prices of agricultural substitutes (beef, pork, chicken, lamb), real prices have developed very favourably for fish producers in the long term. In contrast, the prices of industrial and cultured fish have

developed in much the same way as agricultural prices, until recently.

Price trends, of course, would have been determined by supply and demand factors. For example, in the cases of fishmeal and fish from aquaculture, substitution and production expansion can well explain the respective downward price trends of these two quality groupings. In the case of fishmeal, soya meal is a close substitute as an ingredient in animal feed, while aquaculture production has grown by about 13 per cent per annum over the last decade.

Due to degraded stocks, for the last 15 years, the annual world catch of high-quality fish has stagnated at around 55-60 MT. Expanding demand would normally have led to a strong positive trend in real prices (by an order of magnitude of +3 per cent per annum). However, on the demand side, substitution by fish from aquaculture, and ever cheaper meats from agricultural production, have restrained (producer) price developments. On the supply side, this has been attained by the combined cost-reducing effects of technical progress and subsidies.

Until now there have only been about a dozen reasonable analyses of national fish demand carried out worldwide. Such dull matters really get interesting at this point!

Putting aside any misgivings about estimation procedures and the reliability of data, one aspect stands out: price-elasticities of demand typically range between 0 and 1. The aggregate worldwide figure would probably fall somewhere between 0.50 and 0.70. This implies that, in terms of revenue, a basic supply shortage is being overcompensated for by a corresponding rise in prices.

In other words, expanding price-inelastic demand, faced with stagnant-to-shrinking world supplies in the medium- to high-quality categories, is causing rising real revenues for the industry. These are partially handed back to primary producers, who then, as a rule, share the same experience: stagnant or falling catches, but relatively faster growing real prices and thus higher revenues.

Such price increases, particularly when supported by subsidies and technical progress, increase profits. There is, therefore, little or no financial incentive provided to cut back on overcapacity, particularly where subsidies help to stabilize or reduce financial costs (both capital and running costs).

Divergent trends

This mechanism explains much of the divergent trends of fish and meat prices over the last 20 years, and certainly, to

Namibianisation: an example to follow?

In the early years of the development of the fishing industry (1949-59) in what was then known as South West Africa (now Namibia), low levels of exploitation, combined with careful conservation and regulation, sustained available stocks. However, corporate pressure from the South African fishing industry, coupled with the illegal status of South Africa's occupation of Namibia after 1966, led to the abandonment of these careful management policies from the beginning of the 1960s. During the 1960s and 1970s, all the controls on fishing were either diluted or abandoned. Arguably, the main reason for this was that the South African government became both the (self-appointed) referee and exploiter. In 1966, the UN revoked South Africa's League of Nations mandate. This effectively made the South African administration in South West Africa illegal. The impact of abandoning conservation policies and regulation regimes is demonstrated by the case of the hake resource. Between the late 1960s and 1990, and despite the establishment, in 1969, of the International Commission for Southeast Atlantic Fisheries (ICSEAF), the hake biomass in Namibia's waters was reduced by over 80 per cent.

Since independence in 1990, the Namibian government has set itself the goal of utilizing "the country's fishery resources on a sustainable basis and to develop industries based on them in a way that ensures their lasting contribution to the country's economy

and overall development objectives." The goal has been pursued through the two main strategies of stock rebuilding and 'Namibianization'. This has been supported by the strict implementation of an effective fishery management system.

A central policy plank of the 'Namibianization' strategy has been the promotion of land-based processing of the fish catch. This has been achieved through a system of quota allocation (non-transferable) and licence and landing fees that both favour Namibian citizens and provide incentives for vessels to land their catches locally. This has enabled the country to reap the benefits of shore-based value-adding fish processing, maximizing government revenues, encouraging investment in Namibia, and creating wealth and employment.

Five years after taking control of its fisheries resources at independence, Namibia had created 6,000 new jobs, doubled wage employment in the fisheries sector, tripled foreign exchange earnings, generated tax revenue thrice the Fisheries Ministry's budget, and integrated the fisheries sector more fully into the wider Namibian economy.

This has been achieved against a background of adverse environmental conditions (the 'Benguela Niño' of 1993-94 in the fishery), a major reduction in the Total Allowable Catch (to promote stock recovery) and a 30 per cent reduction in fish landings.

some degree, the business performance of fishing enterprises worldwide to which, as noted above, the FAO refers.

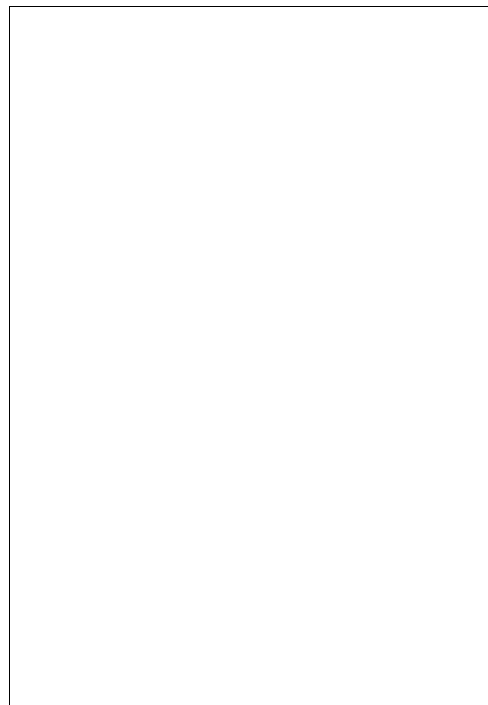
Of course, subsidies and technical progress have similar positive effects on the profitability of fishing enterprises. To better understand the problem, a complete rethink is required on the way we analyze global fisheries production. In concrete terms, this means incorporating demand-and-supply dynamics as well as subsidies into our general fisheries production model. We should also question the standard textbook expectation that ITQ (Individual Transferable Quota) policies will result in both economically and ecologically efficient fisheries, given the scenario of

stagnating supplies from fish catches worldwide, subsidized variable costs, declining growth rates of aquaculture production, and expanding price-inelastic demand for fish.

Growing demand, with stagnant and even dwindling supplies from capture fisheries, appears to be the likely long-term future scenario for global fisheries. It is, however, doubtful whether aquaculture can sustain the growth rates of the last decade, as it is facing serious ecological problems.

Demand side

On the demand side, there is also a tendency to prefer wild fish for quality reasons. Furthermore, it is also quite uncertain when and how seriously the



highly energy-intensive industrial fleet will have to face up to the pressures of rising energy prices in real terms. Although the subsidy problem might be tackled in the context of the next WTO round, it might, in all political likelihood, be solved to only a degree.

Indications are that real import prices of fish are set to increase by up to 1.5 per cent per annum at c.i.f. prices. But this is no more than a guesstimate. There is simply not yet sufficient information available to undertake a reasonable price projection exercise.

It is likely that prices and subsidies will continue to burden the taxpayer/consumer, on the one hand, while, on the other, they will continue to provide strong incentives to producers to at least maintain fishing capacities and effort.

Of particular concern are the low-income consumers in a number of coastal developing countries, with their maize- and root crops-based diets, who are likely to suffer increasing shortages of essential amino acids, due to real price developments curtailing their fish consumption. Given the prospect of the demand developments and the capacity/effort sustaining factors discussed above, any positive marine-ecological outcome will very

much depend on two kinds of intervention:

- the future success of direct government actions to reduce worldwide catching overcapacities, and the co-ordination of these actions at the international level; and
- the successful propagation of ecologically, socially and economically rational fishery policies.

As the example of the Namibian case, with its INRQ (individual non-transferable renewable quota) and strict MCS policies, proves, development of co-operation, and the involvement of civil society in fishery policy matters can greatly contribute to achieving such ends. In this case, successful stock management, MCS and industrial processing policies have been installed since 1990, costing less than 4 per cent of total primary revenues and probably less than 25 per cent of the total fishery resource rent of the country. 3

This article has been written by Dr Hartmut Brandt of the German Development Institute (DIE). These issues are dealt with in greater depth in a study published by DIE entitled *The EU's Policy on Fisheries Agreements and Development Co-operation: The State of the Coherence Debate*. Published in German, it will be published in English in October 1999

Fighting for space

Fishworkers' communities face another challenge as tourism develops in the coastal areas of West Africa

This article deals with fishermen's organizations at the national level, although there exist traditional associations at the local level. Today, the type of fishermen's organizations existing in countries from Mauritania to those in the Gulf of Guinea demonstrates that it is a strictly material and economic concern which is the base for setting up fishermen's organizations nationally.

It is in this context that the initiative of CNPS (Collectif National des Pecheurs Artisanaux du Senegal) can be appreciated, despite the growth crisis this organization is currently facing. Towards the end of the 1980s and the beginning of the 1990s, CNPS decided to evolve thematically, refusing to focus its analysis and actions strictly on economic issues. Thus it came to pass that after 1990, for the first time in African artisanal fisheries, an organization defended its right to participate in the EU-Senegal negotiations of fisheries access agreements. Since 1994, CNPS has participated in the negotiations for the renewal of these agreements.

These agreements, considered a threat to the traditional rights of access of artisanal fishworkers to the resource, consolidated the CNPS, giving it a more political dimension, compared to co-operatives. This happened in two ways.

First of all, the campaigns led by CNPS to denounce these agreements mobilized women from the processing sector, especially when the 1996 agreement decided to explore the possibility of access to small pelagics for European vessels.

Secondly, as the Senegalese are huge consumers of fish themselves (28 kg/person/year), the media coverage of the agreements won the organization public sympathy. From a social

organization, CNPS grew into a more general movement.

With the complicity of some government functionaries, promoters of tourism have developed their business on land initially used by maritime communities for fishing, processing and, in some cases, for agricultural activities complementing fishing. This process of displacement in the localities of M'bour, Joal, Kayar and Saint Louis is a 'hidden privatization' of coastal zones. The development of tourist complexes and related activities, such as yachting, are forcing fishermen and women to reduce, or even abandon, their earlier activities.

In the zone of M'Bour, for example, many fishermen are not able to use their beach seines because tourist complexes have privatized these spaces with marker buoys. These areas are being used instead for recreational boating. Similarly, the mooring of yachts and pleasure boats close to the coast makes it impossible for fishermen using oars to practice passive net fishing in their traditional zones. These problems of cohabitation between tourists and fishermen using traditional gear and pirogues propelled by oars are more accentuated in the localities of M'bour, Hann and Sendou.

Women's problems

Women fish processors are also the victims of tourism development. For some years, women fishworkers based in M'Bour have lived under the threat of displacement. Public authorities prefer to defend the interests of the tourist sector rather than those of women fish processors, despite their socioeconomic importance in creating jobs and supplying fish and processed fish products not only to the Senegalese population but also to other West African consumers.

of small-scale fishermen who still utilize unmotorized boats propelled by oars or sails and who can not go farther out to sea to fish in other fishing zones.

In July 1990, CNPS began a campaign to denounce the negative impacts of tourism. This campaign had several phases, including the sending of memorandums to the authorities and the organizing of press conferences. A request was made to the government proposing a study, to be undertaken jointly by CNPS/Tourism Ministry, to evaluate the consequences of tourism. Through its campaign, CNPS hopes to persuade the government to switch from a relationship of conflict between fisheries and tourism to one of sustainable cohabitation. One of the main demands is to get the Senegalese parliament to extend land reservation for fishermen.

Women will play a prominent role in this campaign for the recognition of the access rights to land because, for cultural and historical reasons, the essential activities of women relating to fisheries (like processing and small-scale marketing) take place on land. 3

The administration, in fact, constantly reminds the women that the smoke produced by fish smoking is unpleasant for tourists (foreigners, of course). The authorities conveniently forget the important role played by a locality like M'bour in the African integration process and in the regional market. M'bour is a converging place for fishmongers from several countries within the subregion, and contributes to the supply and exchange of fish adapted to African tastes.

In some localities, artisanal processing of fish has completely disappeared because of the lack of the necessary space. The use of the coastal zone as a residential area for wealthy people (both local and foreigners) has, for example, led to the removal of women fish processors in Hann. They have now to work at a distance of 4 km from their homes.

At the end of the 1980s, a small group of women who had been able to maintain their activities along the coast, were pushed out towards Thiaroye by the political authorities of the village, in collaboration with the police. This was the consequence of a demand by a Korean who wanted to start a fish processing plant and who promised to recruit for his boats some family members of the politically powerful village authorities. These developments also threaten the right of access to resources for a number

This article is by Aliou Sall of CREDETIP, BP 3916, Dakar, Sénégal

Pushing for three levels

The third instalment in the series on the pioneer of Japan's fishery co-operative movement recalls the efforts that went into marketing

In those days, fishermen borrowed fishing gear, but also food, clothing, and even money for weddings and funerals. All this was borrowed from merchants prior to the fishing season, and the fishermen would repay these loans with their products. This was not intrinsically a bad system, but the fishermen would leave to the merchants the responsibilities for scaling the catch, for setting all the prices, and for determining how much they would buy. On top of that, the merchants charged extremely high interest rates, as much as 2.5 per cent a month. The fishermen were thus at the mercy of the merchants. As they had no capital of their own with which to work, they were forced into conditions not unlike those of slaves. In such a situation, they were bound to remain passive and spiritless.

These merchants were based in all the large fishing cities of Hokkaido, such as Hakodate in the south, Otaru in the northwest, and Kushiro and Nemuro in the east. In the smaller fishing towns and villages, the merchants had agents working for them. Virtually every fisherman in Hokkaido had to deal with these powerful merchants.

In order to free the fishermen from their poverty, it was absolutely necessary for us to begin by abolishing the outdated relationship between the merchants and fishermen, as this relationship was one of the major causes of their poverty, and to replace them by establishing FCAs.

Before I began promoting this movement, I researched the situation throughout the nation. I discovered that only a few FCAs were engaged in joint marketing, and that one of these, in Kochi Prefecture on the southern island of Shikoku, was doing very well, so I went there on a study visit.

They had adopted feudal practices for shipping their products. The feudal lord of the region allowed the fishermen to ship their products jointly so that they could collect tax on the products. With such a system, this small prefecture handled ¥6 million worth of transactions. This amount was much higher than that of Hokkaido, even though Hokkaido's fishery production was ten times greater than Kochis.

Theories or desk-based plans alone are not effective to resolve the economic problems of fishermen. The best method is to have them apply their experience to the problem. If they are to remain united, it is particularly necessary for them to engage in joint marketing.

Therefore, when most of the FAs had been changed to FCAs, I went to Hokkaido Development Bank and asked the Managing Director, Mr Nagata, if he would give loans to the FCAs by using money from the central government's Farms and Fisheries Economic Rehabilitation Fund. However, because the fishermen already owned over ¥2 million, the bank refused to give any further loans to the fishermen.

Nagata said that if we were truly planning to engage in joint marketing, he would provide loans to the FCAs. I visited Masaki Furuya, Chairman of the Mombetsu FCAs, and suggested that he begin such joint marketing. I advised him that the fishermen should remain united so that each one could join and negotiate diplomatically with the merchants, and so that they would not be intimidated.

No alternative

He assembled the merchants of the area and informed them that the fishermen had no alternative but to sell their products

through joint marketing. He then asked if the merchants would allow the fishermen to repay their debts in yearly instalments. Fortunately, the merchant realized that they might lose everything if they did not market their products in co-operation with the fishermen, and the merchants therefore agreed to the offer.

To start the venture, however, the Mombetsu FCA had only ¥1000. I, therefore, promised them that they would be able to receive a low-interest government loan, as I had already received the consent of Mr Nagata on this matter, as mentioned above. I was pleased to find that they were able to receive at least ¥10,000 from the bank. They were then able to sell their products at prices 30 per cent higher than the average price ruling in the area.

The news of their success spread throughout Hokkaido, and the following year all the FCAs in the region began to engage in joint marketing, and eventually this movement spread throughout Hokkaido. Even the merchants came to realize the benefits of joint marketing, since the fishermen were now able to repay their outstanding loans, even if they had to do so in instalments which took several years.

Nevertheless, we met with many strong reactions from both the fishermen and the

merchants. The fishermen would sometimes tell me that my stories sounded great, but they were worried and asked, "If we have a bad harvest, will the Hokkaido government feed us?" I would always reply by telling them to be patient, to bear with the current disabilities so as to ensure a promising future. I continually reminded them that they had to save for a rainy day, and that they should remain brave.

I visited every small fishing community and spoke to the people, sometimes on their fishing boats and sometimes on the beaches where they were working. I tried to help them by speaking as concretely as possible about their poverty and its causes. Some of my statements were very extreme, so the fishermen did not always believe me, but, as radical as some of my statements were, I always had the strong support of the central government and its Farms and Fisheries Economic Rehabilitation Fund.

Federations organized

Once an FCA was established in each fishing village, the various FCAs had to co-operate with each other, and, in this way, the co-operative movement was developed. The next step was to organize the federation. The programme I chose to accomplish this involved establishing two levels of federations above the local FCAs —first setting up new regional

federations, and, subsequently, the Hokkaido Federation of FCAs, which we call Dogyoren. I believed it would be more effective to have such a system than to have only one large all-encompassing organization, since it would facilitate the strengthening of the functions of the FCAs.

Under the old Fishery Law, there were already 12 regional federations, but they were merely meeting salons for the fishermen, and they did not play an active part in the business of the fishermen. I thought it would be best to make use of these federations, as the government had branch offices in each of the central cities. If I appointed the directors of these organizations to chair the new FCAs, these FCAs would be able to rely on the advice and experience of these gentlemen to consolidate their foundation.

Although some fishermen had a basic understanding of co-operative ideals, they seemed unable to manage a large and comprehensive federation covering the breadth of Hokkaido. Therefore, I thought it was necessary to establish first a temporary three-tier system with regional federations on a level between Dogyoren and the FCAs. These regional federations would be more appropriate places than Dogyoren to carry out the training of the fishermen.

I suggested such a system and training programme to Superintendent Yamanaka of the Fishery Policy Section of the Ministry of Agriculture and Forestry. While he usually agreed with me regarding the matters of establishing FCAs, he did not approve of the three-tier system. He believed it was not necessary to retain the regional federations, since they did not play an important part in the system.

He thought the system would be three-tier in name only, and that the significant operations would be carried out by only the local FCAs and Dogyoren, and that the regional federations would interfere with the work of the local FCAs and Dogyoren.

Since he was in charge of the revision of the Fishery Law, he was not easily persuaded. I persisted, however, and told him that the FCAs would not neglect their

responsibilities to the umbrella Dogyoren even if they became strong and self-sufficient. I knew well enough that we could make progress only through solidarity among the three levels.

Nevertheless, he refused to give in, so I added that the co-operative movement was not working for the benefit of the federation, but for the benefit of the fishing communities, and that we had to remain in close contact with them and educate them in the ways of the co-operative movement. Within two years, I said, the FCAs will reach the next step in their development, and, at that point, the regional federations could be restructured and integrated into Dogyoren as branch organizations.

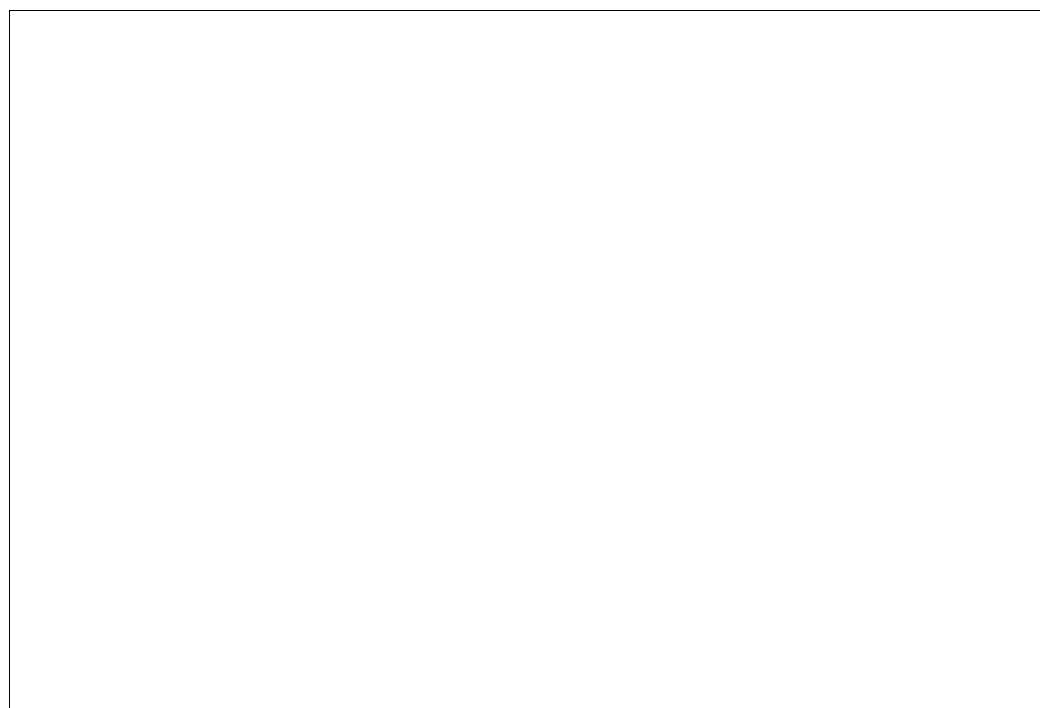
After hearing our debate, Mr Toda, Chief of the Fishery Bureau, decided that they would leave this matter to me, and thus I received the approval of the central government to promote the programme. I returned to Hokkaido and began to establish the regional federations and Dogyoren.

At about that time, there was a movement among some of the leaders of the FCAs to nominate me as the managing director of Dogyoren. At first, I turned down this offer, since I was busy with my work in the government and because my chief, Mr Kudo, did not want me to leave the department. Nevertheless, many of the FCA leaders believed that I was the only one capable of leading the co-operative movement, and they soon held a general meeting and elected me managing director without my consent.

Subsequently, Kudo discussed the situation with a Mr Kawamura, the chairman of the Mori FCA and a member of the Hokkaido Prefectural Assembly. Almost one year after I was elected, Kudo finally agreed to let me assume the post. Thus my career with Dogyoren began.

Limited staff

When I assumed the new position, I had only one staff member working with me. He had been with the Hokkaido Federation of Agricultural Co-operatives, where he had been in charge of fisheries. He had worked to establish industrial co-operatives in fishing villages.



Furthermore, he had been involved in the transactions of fishmeal and dried fish, but after the FCAs were established, these transactions came to be handled by the FCAs. He, therefore, wanted to work for the newly established Dogyoren.

The Dogyoren office consisted of only one small room in the wooden building of the government's Fisheries Department. For the first two years, I strove to organize the regional federations and to train them how to operate joint marketing. ❸

This is excerpted from *The Autobiography of Takatoshi Ando*, translated by Naoyuki Tao and James Colyn

Thai boxing

Fishing for anchovies using light-luring devices has led to the greatest conflict ever in Thai fisheries

The most important species of fish caught from Thai waters is anchovy, locally called *pla katak*, distributed in both the inshore and offshore waters at depths ranging from 5 m to 60 m, with 70 per cent of the resources distributed in the Gulf of Thailand. In terms of quantity, at 174,000 tonnes, anchovy comes just behind trash fish (over one million tonnes) in Thailand's fish production for 1996.

Anchovy catches generate an annual foreign exchange earning of over US\$30 million for the Thai economy, but today a new type of fishing for anchovies has become the bone of contention between two groups of Thai fishworkers.

Due to increasing demand for boiled and dried anchovies in the export market, the total anchovy production increased about eight-fold, from around 20,000 tonnes in the 1970s to around 160,000 tonnes in the 1990s. As the demand picked up, the anchovy fishermen adopted a technique of fishing with light-luring devices, originally used for squid fishing.

As a result, many squid fishermen changed their target species to anchovies, and many small and medium-sized trawlers also converted their vessels to operate anchovy purse-seines or anchovy falling nets (semi-rectangular shaped nets whose width equals the length of the boats). But these activities were confined to waters beyond 5 km from the seaboard and the fishermen were not allowed to use a mesh below 2.5 cm.

The situation, however, radically changed when the then Deputy Minister for Agriculture, Monthon Kraiwatnusorn, by an order dated 15 March 1996, reduced the no-light-luring fishing zone from five to three km, and removed the minimum

mesh size requirement of 2.5 cm in the Gulf of Thailand, ostensibly to allow for catching of high-value small-sized anchovies called *sai mai*, for the export market. These anchovies, when boiled and dried, would fetch a price six times higher than that for the adults in the same category. The Department of Fisheries' rationale was that even after using small-meshed anchovy fishing nets, the by-catch would be only 10 per cent, which was an acceptable level.

The notification led to the migration of trawler-converted anchovy boats in the category less than 18 m long, with light-luring devices. These were owned mainly by Chinese capital and operated, since 1996, by Buddhist workers from the eastern seaboard who migrated to the southern seaboard, the mainstay of Muslim small-scale fishers.

About 100 such boats thus moved south during the southwest monsoon period with their anchovy purse-seines and falling nets. The fishing range of these boats ranged up to 60 m depth zones and also included waters traditionally harvested by the local fishermen using boats less than 14 m long. One of the provinces affected by this migration was Songkhla, which has an abundant anchovy stock, thanks to the nutrients from the shrimp aquaculture farms that end up in the coastal waters.

Production decline

The migration of the eastern anchovy falling-net fleet took place at a time when the local production of species like anchovies, crab, squid and shrimp were on the decline. The local fishermen attributed this decline to light-luring fishing by the migrant anchovy boats—fish that feed on anchovies could no longer be found in these waters.



Thailand



Light-luring fishing also leads to the catching of juveniles, which are important for restocking the traditional fisheries. Moreover, since inshore catches have dropped, the local fishermen have to go farther out into the sea for fish. They also complained of a decline in their incomes from anchovy fisheries during the day. Monthly income, for example, has declined from Baht20,000-30,000 to Baht1,500-6,000. Many small-scale fishermen have been forced to become labourers in seafood factories.

While they did not mind day fishing for anchovies with nets not less than 2.5 cm mesh size, they were fiercely opposed to light-luring fishing. All fishers who used gear without the aid of lights were affected by light-luring fishing.

On 16 October 1997, the small-scale fishermen mounted a protest at the Provincial Town Hall demanding that the Songkhla area be made free of night fishing for anchovies. In March 1998, the small-scale fishermen intensified their protest and blockaded the Songkhla bay. According to a report of the Department of Fisheries, all people in Songkhla were affected by this blockade since the price of gasoline, cooking oil, seafood, and other essential goods went up. The small-scale fishermen struck again with their blockade in July 1998. The Governor of the province responded and, by a Provincial Notification dated 28 July 1998, declared the bay off limits for light-lure fishing for anchovies.

As a result of objections raised by the anchovy processors and fishermen against the Notification, a Public Hearing was organized on the issue on 26 December 1998, which was boycotted by the small-scale fishermen. The Notification, the Hearing observed, was difficult to implement because there was no demarcation of the provincial territorial areas and because it was in

violation of the Article 46 and 56 of the 1997 Constitution, namely, right to personal earnings. The Hearing, inter alia, proposed that trawls and push nets be banned all over the country.

On 3 June 1999, the National Fishery Policy Committee proposed a zoning system to resolve the conflicts. According to this proposal, light-lure fishing for anchovies was made permissible in the 5-12 km zone for boats less than 16 m long and, beyond 12 km, for boats greater than 16 m long. The zoning system, however, was rejected outright by the small-scale fishermen, on the ground that light would attract small fish from shallow waters. They stuck to their demand for a total ban

The blockade was described by one of its leaders as a show of force to dramatize the small-scale fishermen's grievances in the light of the threat posed by anchovy fishing at night time.

on light-lure fishing. The National Fishery Policy Committee had difficulty in accepting this demand because of the heavy investment that was already made in light-lure fishing. Since, on average, around Baht300,000-400,000 would have been spent on modifying and equipping an old trawler with a generator, the Committee wanted to give the vessels in light-lure fisheries a chance to recoup their investments. It feels that the fleet should be given another five years to phase out light-lure fishing.

This approach led to a new wave of unrest. On 13 June 1999, according to newspaper reports, about 300 small fishing boats converged in the Songkhla bay and the port was once again blockaded. Freighters were tied up. Cruise ships had to delay their arrivals. Gasoline prices shot up. The export industry, especially of rubber and food products, including seafood, was also hit.

Out of work

The canned tuna industry in the south, dependent on imported raw materials, got crippled, and 350 part-time port workers found themselves with no work and no pay. Losses amounting to Baht100 million (US\$3 million) were reported. The

blockade was described by one of its leaders as a show of force to dramatize the small-scale fishermen's grievances in the light of the threat posed by anchovy fishing at night time. There were also demonstrations against anchovy fishing in different places. The blockade of the port went on for over a fortnight until the navy removed it on 27 June 1999.

The anchovy fishermen rebut the argument that their fishing practices are destroying marine resources. In purse-seine fisheries, they agree, there is a 22-38 per cent by-catch during the night and 6 per cent during the day. But in falling-net operations, which are undertaken only at night, the by-catch rates are only 7-16 per cent, which is acceptable by any standards.

In Songkhla, they contend, only falling nets are used in anchovy fisheries. The anchovy fishermen, on the other hand, hold trawlers and push-nets to be far more destructive than anchovy fishing. They claim these fishing practices to be a greater threat to natural fish stocks than light-lure fishing.

In Chumphon, the anchovy fishermen staged a counter-protest. In Trat, 3,000 anchovy fishermen demonstrated before the provincial hall in Muang district, demanding that the conflict be settled. The large-scale anchovy fishers have threatened to blockade the Chumphon

bay if commercial use of fine-mesh nets and lights are banned within 5 km of the shore.

In an editorial, the Bangkok Post wrote that registration of anchovy boats equipped with lighting for night fishing must come to an end and the existing fleet must be phased out. The paper wanted this to be implemented as soon as possible, after giving a chance to the anchovy fishermen to recover their investment.

The small-scale fishermen are reportedly supported by the New Democratic Party, which apparently has the backing of the Thai Muslim community, including fishermen. The government does not openly want to highlight the ethnic dimension of the conflict, as the policy of the King, who is the constitutional head, is to talk about equality between different communities, not difference.

Study underway

On 15 June 1999, the Agriculture Minister, Pongpol Adireksarn, promised to consider the demand for a ban on night fishing. The demand has been forwarded to the National Fisheries Policy Committee. The Committee, which met to resolve this issue on 28 June 1999, has decided to further study the environmental and socioeconomic impact of anchovy fisheries, and the problems with law enforcement in fisheries. Its report is expected by October 1999.

The women who work in the anchovy boiling and drying business are against any ban on light-lure fisheries for anchovies. They reportedly earn about Baht5,000-6,000 a day per family (going up to Baht10,000), which is ten times what they would otherwise earn from prawn peeling. These women do not believe that anchovy is being overfished since the fish has a short life cycle of one year. About 4,000 women are involved in anchovy boiling, and they follow the fishers to the Andaman Sea during the northeast monsoon.

No blood has yet been spilt as a result of these conflicts in Thai waters. However, it has turned out to be the most significant conflict in the history of Thai fisheries. Those for and against anchovy fisheries with light-luring techniques, are indulging in a no-holds-barred campaign to either ban or maintain this fisheries. ♣

This report is by Sebastian Mathew,
Executive Secretary, ICSF

News Round-up

E-fish

It had to happen sooner or later. You can now trade for fish on the Internet. Infomar, a project funded by DG III (Industry) of the European Commission, and a consortium headed by VEGA Group Plc, has been allocated a budget of ECU3.2 million to develop an

information and electronic trading system aimed at optimizing the marketing of fresh seafood within the EC fishing industry.

Infomar will consist of two functional modules designated FishTrade and FishCast. FishTrade will match catch availability data from vessels with buyers' requirements to establish real-time contracts as well as arranging complementary services like international shipping, insurance and quality assurance. FishCast will bring together catch data from

fishing vessels, current prices, market demand and weather conditions and predictions to forecast prices for spot markets. This service will be available by subscription.

Infomar hopes to link fish buyers, sellers and fishing vessels. As a result, all members of the fishing community will benefit not only from data as to what is currently available at the market but through the link with vessels what will be available more than a week into the future. Using this advance indication of supply and demand, buyers can plan their purchases, and suppliers can arrange to get their product to the market where its profitability is the highest. The VEGA Group claims that the result will be a higher value for the fish on the market, a more stable price for consumers, less waste, and a more efficient use of a natural resource.

Stop price fixing

Fishermen in the village of Redonda, State of Ceará, have called on all lobster fishermen in **Brazil** to withdraw lobster traps from the sea until SINDFRIO, the

lobster industry syndicate, stops price fixing. Fishermen from all over the State joined the strike movement, as their representatives met with the Attorney General to demand an antitrust suit.

The price for 1 kg of lobster tails opened the season at US\$24, but on 1 June, SINDFRIO reached an agreement with all exporters to cut prices by 25 per cent to US\$17.60, even as lobster prices on the international market remained unchanged and there was no variation in the exchange rate between the real and the dollar.

Half of Brazil's total lobster exports come from the small-scale sector. Artisanal fishermen, who are already burdened by heavy losses from predatory fishing and overfishing, have seen total exports drop from 2,700 tonnes in 1992 to 1,300 tonnes in 1998. They blame Brazil's government and the lobster fishing industry for the poor fisheries management. The Fishermen's Forum against Predatory Fishing has been fighting since 1993 for the implementation of the existing Lobster

Fisheries Management Plan. More details can be had from René Schärer (email: terramar@fortalnet.com.br)

High-seas murder

Authorities in **China** say that a Taiwanese captain who killed 11 mainland Chinese contract fishing workers in Mauritius waters last February must be severely punished, reports the Xinhua news agency. A joint investigation by mainland officials revealed that the 11 crew members of the Taiwanese fishing boat *Chin Ching* were shot dead by the captain because they refused to sign a renewal of their three-year contracts. Four other terrified crew members jumped into the sea and were drowned. A spokesman for the Chinese Ministry of Foreign Trade and Economic Co-operation said that a new model contract on providing crew for fishing boats

across the Taiwan Straits is being drafted. Meanwhile, the case is being handled by the judicial department of Mauritius, where the ship docked after the killings.

At stake

According to D. Nandakumar of GAIA Info Systems, letters of protest have been sent to a committee of the Government of Gujarat, **India**, asking that the mangroves of the State be protected from planned developments. The Kutch coast has been targeted as an area for industrial development,

flouting the Coastal Zone Regulations (CRZ) norms. Environmentalists are concerned specifically about the coastal belt of Mundra Taluka and the adjoining area up to Kandla. While they are not averse to the development of industry, they say this should not happen in violation of conservation norms. As Kutch and Jamnagar districts have been declared the most important areas for mangroves in Gujarat, the area has been declared 'reserved' under the West Mangrove Reserve Forest. This means that the entire Kutch coastline has about 890 sq km of mangrove forests which are protected under the CRZ regulations.

Protestors have urged that immediate steps be taken to ensure that this sensitive and rich ecosystem is not destroyed because of poor planning for industrialization.

More draggers?

High Liner Foods, a seafood company based in Halifax, **Canada**, has said that as a result of a slight recovery of cod off southern Newfoundland, it plans to buy up to five modern fish draggers or trawlers.

In response, Mark Butler, Marine Co-ordinator at the Ecology Action Centre (EAC) expressed shock and disbelief. The Federal government had just spent large sums of money trying to reduce fishing capacity, and it was inconceivable that at the slightest hint of fish, a company would try to acquire new draggers.

It is believed that fish stocks off Nova Scotia are not showing any sign of recovery and those off Newfoundland only a slight improvement.

The EAC has urged High Liner Foods to shelve its plans. It has also called on the Federal government to develop an approach to fishing capacity which embodies ecological principles and social values.

Net bombs

Fishermen in **Italy** are afraid of netting bombs rather than fish each time they set out to sea. In the wake of the NATO attacks on Yugoslavia, seafarers have been studying charts pinpointing where NATO pilots dumped bombs on runs back from Yugoslavia. Other fishermen don't set sail at all, afraid of snagging a pilot's payload.

Most of the bombs hit designated dumping areas in the Adriatic's international waters, but some fell out of the zone, according to officials. Marine authorities brush off

fishermen's concerns that currents could move the bombs. They contend there are no strong currents in the north Adriatic. In the south, where currents do run, they say the sea bottom is so deep it is unlikely that fishing nets would scoop up missiles.

Whales vs fishers

Whales consume approximately six times as much fish as the world's fisheries catch, claims the

Institute of Cetacean Research, Tokyo, **Japan**. As the chief predators in the food chain of the marine ecosystem, whales consume between 280 million and 500 million tonnes of fish each year, say the Institute's scientists.

This is about three to six times the amount harvested by marine fisheries. There are approximately 79 species of whales in the world. Some of them, like the minke whale, consume large quantities of commercially valuable fish species like sardine and the Pacific saury.

According to Yuichiro Harada, Staff Officer at the International Division of the Federation of Japan Tuna Fisheries Co-operative Associations, at the last meeting of the International Whaling Commission in Grenada, Japan cast doubts over the unilateral protection of cetaceans. It proposed the need for management measures designed to encompass the entire marine ecosystem, including the utilization of resources by whales.

Downflooding is the catastrophic influx of ocean water into the hold. It's a sort of death rattle at sea, the nearly-vertical last leg of an exponential curve. In Portland, Maine, the Coast Guard Office of Marine Safety has a video clip of a fishing boat downflooding off the coast of Nova Scotia. The boat was rammed amidship by another boat in the fog, and the video starts with the ramming boat backing full-screw astern. It's all over in twenty seconds: the crippled vessel settles in her stern, rears bow-up, and then sinks. She goes down so fast that it looks as if she's getting yanked under by some huge hand. The last few moments of the film show the crew diving off the upended bow and trying to swim to the other boat fifty feet away. Half of them make it, half of them don't. They're sucked down by the vacuum of a large steel boat making for the deep.

—from *The Perfect Storm* by Sebastian Junger



ICSF is an international NGO working on issues that concern fishworkers the world over. It is in status with the Economic and Social Council of the UN and is on UN's Special List of Non-Governmental International Organizations. It also has Liaison Status with FAO. Registered in Geneva, ICSF has offices in Chennai, India and Brussels, Belgium. As a global network of community organizers, teachers, technicians, researchers and scientists, ICSF's activities encompass monitoring and research, exchange and training, campaigns and action, as well as communications. SAMUDRA REPORT invites contributions and responses. Correspondence should be addressed to the Chennai office.

The opinions and positions expressed in the articles are those of the authors concerned and do not necessarily represent the official views of ICSF.

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