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International Ocean Institute (IOI), India

Forging Unity:
Coastal Communities and the Indian Ocean's Future
Indian Institute of Technology, Chennai, India
9 to 13 October, 2001

Conference Proceedings

International Collective in Support of Fishworkers (ICSF)
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**Forging Unity:
Coastal Communities and the Indian Ocean's Future**

Proceedings of the Indian Ocean Conference held at
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To the memory of

Elisabeth Mann Borgese (1918–2002)

and

Maizan Hassan Maniku (1953–2002)

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Preface

In no other part of the world have there been as many incidents of fishermen being killed, fired on, arrested or detained as in the Indian Ocean, consequent to countries of the region adopting the 12-nautical mile territorial sea and the exclusive economic zone (EEZ) regime. Nonetheless, these very nations have not recognized the gravity of these problems sufficiently enough to deal with them with alacrity.

In the last decade of the 20th century, according to press reports, about 200 fishermen were shot dead in the region, and hundreds injured. Since 1998, about 1,600 fishermen have been arrested and detained. While death by firing was mainly confined to the waters between India and Sri Lanka, arrests and detention have been reported from all over the Indian Ocean Region. Egyptians arrested by Eritrea; Eritreans by Yemen, Sri Lankans by Somalia, Seychelles, Maldives and India; Indians by Somalia, Pakistan, Sri Lanka, Maldives and Bangladesh; Pakistanis by Iran and India; Burmese by Bangladesh and India; Thais by India, Bangladesh and Myanmar; Indonesians by India and Australia—thus from the Red Sea to the Arabian Sea, from the Bay of Bengal to the Indian Ocean, there are hundreds of cases of fishermen being arrested and detained for undertaking fishing activities or for just being found drifting in the waters of other nations. Many incidents are reported from countries with adjacent maritime zones, mostly between countries that are economically poor.

It was the heart-rending stories of arrested fishermen, whose only crime was to fish for a livelihood, the total denial of even natural justice, and the plight of their families that prompted the International Collective in Support of Fishworkers (ICSF) to think of organizing a conference to highlight these issues. Thus was born the Indian Ocean Conference, titled *Forging Unity: Coastal Communities and the Indian Ocean's Future*, held at the Indian Institute of Technology (IIT) Madras, Chennai between 9 and 13 October 2001.

We conceived the conference as a forum for representatives of fishworker organizations, governments, the academic community, and other non-governmental and multilateral organizations to sit together and discuss the transboundary problems of fishworkers of the Indian Ocean Region, so as to come up with solutions. The final goal was to arrive at a Vision Statement that would put forth concrete proposals to influence governments in addressing such distressing problems.

From an Indian Ocean perspective, we also realized, while planning the conference, that the region had sufficient fisheries resources that could be equitably shared amongst the riparian States using selective fishing techniques and small-scale fisheries. We, finally, decided to maintain a broader focus and discuss not only transboundary issues but also other issues that concerned the coastal fishing communities of the region.

It took us four years to organize the conference. During this period, the idea of the conference went through several revisions. There were several debates on whether or not the conference should address only fisheries issues. Although historically an important ocean, we realized that, in the post-colonial era, there has been very little contact between the riparian communities of the Indian Ocean Region. We thus considered the conference as an important opportunity to explore the idea of an 'Indian Ocean community' by bringing together representatives from all frontiers of the Indian Ocean (with the exception of the Middle East). In this sense, the conference was unique, as it attracted people from all around the Indian Ocean, from East Africa to Southeast Asia, and from the southern small island States in the Indian Ocean to South Asia.

In organizing the conference, we sought the collaboration of the International Ocean Institute (IOI), which focuses on the peaceful and sustainable use of the oceans and its resources, through operational centres in Asia and Africa. The late Professor Elisabeth Mann Borgese, Founder, IOI, was to inaugurate the conference. In the aftermath of the unfortunate war in Afghanistan, she was unable to inaugurate the conference since she apprehended disruptions in air travel to India from Europe. We were also unsure how many of the invited participants would finally attend the conference, but, to our surprise, all invited participants, except two, were able to participate.

This publication, the Proceedings of the Indian Ocean Conference, is dedicated to the memory of two distinguished persons: Elisabeth Mann Borgese, a pioneer in international legislation to protect the world's oceans, who passed away on 8 February 2002, and Maizan Hassan Maniku from Maldives, a member of ICSF and a marine scientist who passionately believed in the idea of an Indian Ocean community, who passed away on 13 July 2002.

Sebastian Mathew
International Collective in Support of Fishworkers (ICSF)

28 January 2003

Foreword

It is said that 60 per cent of the world's population lives within 60 km of the coastline and that this figure would increase to 75 per cent within the next decade or two. Even if these figures are off the mark, the fact remains that there is a steady movement of the population towards the coast. At the same time, there is also a continuing depletion of the natural resources of the coastal zone and the coastal waters.

The traditional coastal communities of the world are caught between the two movements: the pressure from the land and the depletion of the ocean resources. In particular, the coastal communities of the Indian Ocean are burdened with problems of poverty, unfair competition from trawlers, lack of security, natural disasters, scarcity of drinking water, industrial pollution, and so on. We should also note that these communities consist of both fishing and non-fishing groups. While the livelihood of fishers is threatened in many ways, the lot of the non-fishing communities is even worse in some places.

It is vitally important for the Indian Ocean community to transcend narrow political considerations and come together in the struggle for a just and equitable world. It is in this context that the International Collective in Support of Fishworkers (ICSF) and the International Ocean Institute (IOI) organized the conference titled "Forging Unity: Coastal Communities and the Indian Ocean's Future" in October 2001. The Proceedings of the Indian Ocean Conference presented here reflect both the rich diversity and the striking unity among the coastal communities of the region.

It is our great regret that two major personalities: Elisabeth Mann Borgese, the Founder of the IOI and Maizan Hassan Maniku, the former Director-General of Fisheries Research of Maldives and a member of ICSF, both passed away since the Conference was held. This has been a big loss to the two organizations. We join ICSF in dedicating these Proceedings to the memory of these two protectors of the Ocean and its resources.

Professor Elisabeth Mann Borgese founded the IOI in 1972 and worked ceaselessly for establishing just ocean governance. Elisabeth, along with other colleagues, crafted the United Nations Convention on the Law of the Sea (UNCLOS) over several years of tortuous negotiations. UNCLOS is a landmark international agreement that takes the side of the developing countries and the small islands. Elisabeth was passionate about training professionals from the developing countries in ocean affairs, and there are today several thousand IOI alumni around the world working for the cause of the oceans and the coastal zone. The annual *Pacem in Maribus* conferences organized by Elisabeth provided a regular forum for discussing every aspect of the oceans. In her later years, Elisabeth turned her attention to the plight of the coastal communities and promoted many IOI projects like the Women and the Sea Programme and the IOI India Eco-villages project. It should be the endeavour of

IOI and ICSF to carry forward the legacy of Elisabeth Mann Borgese and Maizan Hassan Maniku.

IOI was proud to be associated with ICSF in organizing the Indian Ocean Conference. We are sure that there is enormous scope for the two organizations to work together for the betterment of the coastal communities of the world.

R.Rajagopalan
International Ocean Institute (India)

31 January 2003

Message from the International Seabed Authority

*Ambassador Satya N. Nandan **

I am happy to note that the International Collective in Support of Fishworkers (ICSF), in collaboration with the International Ocean Institute (IOI), has organized a conference addressing specific issues relating to the Indian Ocean fisheries. The theme and the topics chosen for the conference are both timely and purposeful. With the coming into force of the 1982 United Nations Convention on the Law of the Sea, coastal States have gained jurisdiction over large areas of water in their exclusive economic zones, thereby gaining greater opportunities to develop large-scale fisheries. As was to be expected, there has been a significant increase in fish catches with the use of modern trawlers and equipment. Development of intensive fishing has impacted on stocks. Its effects are felt by traditional subsistence fishers. In many cases, small-scale fishermen have been displaced and, therefore, have to seek new fishing grounds, competing with large commercial fishing vessels. In their search for ever-reducing fish, traditional subsistence fishers often drift into neighbouring coastal areas and get arrested for illegal fishing. There is, thus, a need to address the issues of conflict and competition between the traditional subsistence fishers and the industrial fishers, and to reconcile the interests of both groups. One management approach would be

to demarcate areas exclusively for traditional fishers close to the shore, and license industrial fishing outside such areas. Also important is the issue of better co-operation between neighbouring States that share common boundaries, in order to reduce the incidence of illegal fishing and avoid the arrest and imprisonment of fishers.

These problems, apart from their jurisdictional aspects, have other implications, including the human element of survival of small-scale fishermen in the coastal areas, especially of developing countries. The Indian Ocean Region accounts for a large number of small-scale artisanal fishers, who use a variety of craft-gear combinations.

There is a need for effective conservation and management measures. This implies international and regional arrangements, better monitoring and control systems, and wider dissemination of information in an easily understandable and user-friendly language.

I am confident that the conference *Forging Unity: Coastal Communities and the Indian Ocean's Future* will address some of these issues, and the discussions will provide useful input for policymakers.

My greetings and best wishes for a successful conference.

*Secretary General, International Seabed Authority, Jamaica.

Message from IOR-ARC

D. Dusoruth *

Abstract

A tripartite approach to regional economic programmes and the overall agenda of regional co-operation made the creation of the IOR-ARC less difficult and more harmonious. IOR-ARC now has a large constituency and has grown into a big organization. The 19 Member States, the five Dialogue Partners and the Observer represent a combined population of half the world. It also represents the single largest market in the world, but, if and only if, it were organized as a single market, which, however, is not the case.

The IOR countries have the resources, including the vast oceans with their huge marine and fisheries potential, the knowhow and technology, large pools of academics and experts, and the business opportunities for a fast-track approach of new ideas and strategies to deepen co-operation and integration.

IOR-ARC aspires to be a coherent and solid regional economic grouping, including all its constituent bodies— governments, the academic group and researchers, the business forum and civil society.

Keywords

Indian Ocean Rim. Mauritius. Oman. Bangladesh. Iran. Seychelles. Thailand. UAE. China. Egypt. France. Japan. UK. Indian Ocean Tourism Organization. WTO.

The creation of the Indian Ocean Rim Association for Regional Co-operation (IOR-ARC) has been a steady march with, inevitably, a long series of meetings, touching on a number of issues. Most of these meetings were held in Mauritius. There was also a very high level of political commitment and consensus on many fronts.

The tripartite approach to our regional economic programme and the overall agenda—a bit unique in the history of regional co-operation—made the creation of the IOR-ARC less difficult and more harmonious. The roles of governments, academia and the business sector were to ensure a broadbased agreement on the 'Indian Ocean Rim' concept.

It was against this backdrop that the Indian Ocean Rim Academic Group and the Indian Ocean Rim Business Forum were created. Let us not forget that the Indian Ocean Rim Academic Group has, as one main objective, the promotion of intellectual dialogue and co-ordinated research in the region.

Following these developments, the Charter establishing the IOR-ARC was adopted in March 1997, and this was a milestone in the history of the organization. By then, we were 14 Member States, and the activities of our three constituent bodies moved relentlessly to implement a Programme of Action, cutting across many priority sectors. In the following two years, the Pilot Co-ordinating Mechanism graduated into a full-fledged Co-ordinating Secretariat.

A Headquarters Agreement between the IOR-ARC and the Government of Mauritius was also signed, making provision for the Co-ordinating Secretariat to enter into contractual obligations and enjoy the facilities, immunities and privileges that are normally extended to international organizations. Besides, we have adopted the Rules of Procedure governing the conduct of the IOR-ARC business. This mechanism is of vital importance in our decision-making process. These activities have

*This message from D.Dusoruth, Director of the Indian Ocean Rim Association for Regional Co-operation (IOR-ARC), was read out to the Indian Ocean Conference by Joseph Rondolph Payet, Resource Manager, Seychelles Fishing Authority.

gained momentum, and we continue today with added dynamism.

At the Council of Ministers of the IOR-ARC in January 2000 in Muscat, the Sultanate of Oman, five new members were admitted: The People's Republic of Bangladesh, the Islamic Republic of Iran, the Republic of Seychelles, the Kingdom of Thailand and the United Arab Emirates. The five Dialogue Partners are: the People's Republic of China, the Arab Republic of Egypt, the Republic of France, Japan and the United Kingdom, and one Observer: the Indian Ocean Tourism Organization (IOTO). We have, therefore, created the critical mass necessary for the Association to meet the challenges brought about by globalization and internationalization of our economies. The IOR-ARC is also being increasingly recognized on the international scene.

IOR-ARC now has a large constituency and has grown into a big organization. The 19 Member States, the five Dialogue Partners and the Observer represent a combined population of half the world. It also represents the single largest market in the world, but, if and only if, we were organized as a single market. This is, however, not the case.

At present, the level of intra-regional IOR-ARC trade stands at only 22 per cent. This is not quite encouraging. Notwithstanding this fact, we have a commitment to the global trade liberalization process, consistent with the principles of the World Trade Organization (WTO), and to non-discriminatory trade regimes. Besides, there are appropriate conditions for us to address new policy objectives and options, in terms of trade, information technology, e-commerce, fisheries and communications, to name but a few areas.

The IOR countries have the resources, including the vast oceans with their huge marine and fisheries potential, the knowhow and technology, large pools of academics and experts, and the business opportunities to give an additional dimension to another fast-track approach of new ideas and strategies to deepen the co-operation and integration process.

We have, at present, more or less completed this first phase of bringing our peoples together in a spirit of friendship and solidarity. There is definitely a sense of belonging, as well as a collective identity.

However, we need to be pragmatic and realistic. Our economies are immensely diversified, with varying levels of economic and social development. There are important disparities that we need to reckon with. But these should not, in any way, be a deterrent to the objectives that we have

set. The disparities are there and will be there. But they should be seen as examples of unity in diversity, bearing in mind, obviously, the fact that the *sine qua non* condition to unity is shared responsibilities.

Mention has been made about the first phase of developments in IOR-ARC. No doubt, there have been some realizations and concrete actions taken to reach the modest level at which we are today. We are now at a critical juncture to move the co-operation process forward at a faster speed—to address our work programmes, to complete our feasibility studies and to implement projects. We have a wide portfolio of projects undertaken by the IORAG, the IORBF and the Working Group on Trade and Investment.

We are, at present, discussing the future of the Chair and Associate Fellows in Indian Ocean Studies. Besides, there are a number of important meetings scheduled for the last quarter of the year. The Republic of South Africa is hosting another Group of Experts Meeting in Technology Enhancement in the Indian Ocean Region. There is the Group of Experts Meeting on Fisheries, which has just taken place in Oman, where we have come up with some recommendations. It is an undisputed fact and a recognized reality that the fisheries sector should today occupy a predominant place on the implementation agenda of our work programme. Consequently, there has been a clear understanding on the need to formulate concrete recommendations for co-operation in the fisheries sector within the Indian Ocean Rim. Future co-operation in this critical area can include fisheries research and development, fisheries management, aquaculture and fisheries trade.

Besides, there has also been a lot of emphasis on investment in fisheries, training, joint ventures on fish and fisheries products, the facilitation of fish trade by reducing trade barriers, and joint promotion strategies to promote the fisheries sector.

There should, indeed, be more exchanges, with a view to developing and managing our fisheries on a sustainable basis. As a matter of fact, we have to discard the conventional concept that the fishing industry is a traditional industry that only offers employment and income—most of the time at very low levels—to the rural population. We have a lot more to do to increase production and to upgrade the quality of our products, so that we are globally competitive and reach a level where our fishermen, and our population, in general, attain economic well-being.

Coming back to IOR-ARC, work is also going on to have a harmonized position among Member Countries at the next WTO Ministerial Conference in Doha, Qatar, in November 2001.

IOR-ARC is, at present, engaged in a very important exercise to look into its future orientation. A High-Level Task Force has been appointed by the Council of Ministers to study, inter alia, the future direction of the organization, the organizational structure and funding of the Secretariat, and the modalities for the interaction of Member States and Dialogue Partners. The Terms of Reference (TOR) for the High-Level Task Force will be finalized at a meeting in Sri Lanka in a week's time from now, and a draft final report of the High-Level Task Force should be ready for circulation to Member States by end December 2001. There will inevitably

be some developments following the adoption of the report by the Council of Ministers.

IOR-ARC aspires to be a coherent and solid regional economic grouping, including all its constituent bodies—governments, the academic group and researchers, the business forum and civil society. Our approach to regionalism, since the issue came on the agenda in 1990, was never to consider it a government-to-government business. We could have well relied on our bilateral agreements for this purpose. IOR-ARC has been designed for all stakeholders to play a proactive role in the process of regional co-operation and economic integration.

This two-day conference on *Forging Unity: Coastal Communities and the Indian Ocean's Future* bears testimony to this privileged instrument of co-operation that prevails in the Indian Ocean Rim.



The Indian Ocean Conference: An Overview

Abstract

This forms the prospectus that was distributed prior to the conference *Forging Unity: Coastal Communities and the Indian Ocean's Future* (the Indian Ocean Conference) as a backgrounder for potential participants. It outlines the issues that are common to the countries of the Indian Ocean Region (IOR), based on discussions with policymakers, non-governmental organizations (NGOs) and fishworker organizations. These include modernization and expansion of fisheries, growing conflicts between large- and small-scale fishers, distant-water access agreements, illegal, unreported and unregulated fishing, coastal environmental degradation and regionalization, as well as initiatives like the rise of the Indian Ocean Rim Association for Regional Co-operation (IOR-ARC). The prospectus also lists the objectives of the conference and gives a profile of expected participants.

Keywords

Indian Ocean. IOR-ARC. Fisheries management. Distant-water access agreements. Coastal degradation. Illegal, unreported and unregulated fishing (IUU). Tuna. IOTC.

1 Background

The Indian Ocean is the third largest ocean in the world. Encompassing the body of water between Africa, the Southern Ocean, Asia and Australia, it provides the earliest evidence of human adaptation to the marine environment. The Indian Ocean, after the Pacific, accounts for the largest number of commercial marine species and the largest share of full-time fishers' population in the world. The Indian Ocean Region also has the largest small-scale, artisanal fisheries in the world, and the wide variety of craft-gear combinations employed to catch hundreds of marine species is the hallmark of the region, where fish is a culturally important food as well as a source of employment, income and foreign exchange. The IOR produces significant quantities of fish, both for the domestic and the export markets.

Tuna and tuna-like species form the bulk of fish production in the Indian Ocean, with about 19 species contributing to about 20 per cent of the total fish catch. According to the FAO, a quarter of the world's tuna production is from the Indian Ocean and its adjacent seas. Half the catch is believed to come from the artisanal and small-scale fisheries, while, in other oceans, most of the tuna catches are netted by industrial vessels. The region also pro-

duces large quantities of shrimp and cephalopods. While species like tuna, shrimp and cephalopods are mainly exported, accounting for an important source of foreign exchange, smaller pelagics, which account for the bulk of production, are, in general, locally consumed, and form the most important source of vital nutrition for the poor.

Between 1950 and 1998, the population of the IOR doubled from under 1 bn to 2 bn. Over the same period, marine fish production increased eightfold—from less than 1 mn tonnes to about 8 mn tonnes. It is significant that, while the Indian Ocean population remained at 40 per cent of the world total during this period, the share of Indian Ocean marine fish catch to the world catch increased from under 5 per cent to about 10 per cent. The potential of the fishery to contribute to the overall well-being of the IOR is, therefore, evident.

Despite this significant increase in fish production, the open-access nature of the marine fishing ground has led to the overexploitation of fisheries resources within three nautical miles in almost all IOR countries. However, according to the FAO, while most of the fishing areas in the world have reached their maximum potential for capture fisheries production, there is still potential for production increases in the eastern and western Indian

Ocean, in waters beyond the littoral sea. There is, therefore, a need to ensure that the Indian Ocean does not follow the example of other ocean areas, with respect to poor resource conservation and management. This implies improvements in international agreements, better quality monitoring and control, supported by improvements in the quality of data and compatible institutional arrangements at the national and regional levels.

From a human development point of view, the Indian Ocean has the largest number of people living below the income poverty line of US\$1 a day. Madagascar, Mozambique, Kenya, India and Bangladesh, for example, have significant shares of their total populations living below this line. Judged against the Human Development Index of the United Nations Development Programme, the most disadvantaged countries in the region are Madagascar, Mozambique, Tanzania, Yemen and Bangladesh.

2 Issues

Countries in the Indian Ocean Region share a long heritage of coastal fishing, seafaring and maritime trading that persists today. As indicated above, artisanal and small-scale fisheries provide the mainstay of the fisheries sector, both in terms of employment and catches. With widespread poverty and underdevelopment in the region, and with significant dependence on fishery resources for food and livelihoods, artisanal and small-scale fisheries could make a vital contribution to the region's long-term development. However, for this to happen, a number of trends must be addressed and remedied in ways that promote the sustainability of the Indian Ocean fisheries resources. Also, and now more than ever before, some of the fisheries management issues are acquiring a regional dimension and, therefore, require a 'community' approach to management—an approach that involves all nations and their principal stakeholders in the IOR.

Based on discussions with some of the key policymakers, NGOs and fishworker organizations, the main issues identified are summarized below.

2.1 *Modernization and expansion of fisheries*

There is evidence, all over the IOR, of depletion of resources and overcrowding of inshore fishing grounds. The increasing availability of small-scale, modern fishing technologies, such as outboard engines, fibre reinforced plastic boats, handheld Global Positioning System (GPS) receivers and

so on, has partially caused fishers in the artisanal and small-scale fisheries in several Indian Ocean countries to move out of their traditional fishing grounds, and also to fish more intensively in their own regions.

2.2 *Growing conflicts*

Previously, conflicts in coastal waters may have been exacerbated by large-scale industrial fishing vessels or bottom-trawling units moving into the inshore waters. However, today, there seems to be a change in the direction of the conflicts. They are often precipitated by the artisanal, small-scale (gillnet and longline/handline gear groups) moving out into fishing grounds more usually the preserve of large-scale industrial fishing vessels, or into the exclusive economic zones (EEZs) of other countries. The conflicts have expanded in scope and scale.

The transborder illegal movement of fishing vessels amongst riparian nations is more pronounced amongst the South Asian and Southeast Asian countries and between the South Asian and island countries in the Indian Ocean. There are reported cases, which are on the increase, of Indian fishing vessels being apprehended in Sri Lanka, Maldives, Pakistan and Myanmar; of Sri Lankan fishing vessels being apprehended in India, Seychelles, Somalia and Myanmar; of Pakistani fishing vessels being apprehended in India, Oman and Iran; and of Thai vessels being apprehended in India, Bangladesh and Myanmar, for fishing illegally. Irrespective of the size, nature and origin of the fishing unit—whether they are small or big, using destructive or passive gear, belonging to riparian or non-riparian nations—countries in the region deal more stringently with illegal fishing by foreign fishing vessels than with irresponsible fishing by their own domestic fishing vessels.

2.3 *Distant-water issues*

Under access agreements, joint ventures or licensing arrangements, non-riparian fishing (or distant-water) vessels can access tuna and a few other resources of the riparian fishing nations in the IOR. In 1998, according to FAO statistics, about 400,000 tonnes of fish were caught by non-riparian fishing nations in the IOR. Most of this comprised high-value tuna.

There are, however, no such arrangements at the regional or bilateral level amongst the riparian nations within the Indian Ocean. A regional

mechanism to address conflicts over access to fisheries resources, as well as fisheries conservation and management issues, is important, taking into account the human dimension associated with fleet migration between countries in the region.

The absence of agreements or procedures to handle expeditiously and humanely the problem of fishermen arrested for poaching often results in the gross violation of the spirit of the United Nations Convention on the Law of the Sea (UNCLOS), which clearly discourages incarceration as punishment for poaching.

2.4 *External threats: IUU*

While addressing the 'endogenous' development needs of the IOR in the realm of fisheries, it is also important to take into account 'external' threats to fisheries in the region. The illegal, unreported and unregulated (IUU) fishing activities, especially by non-riparian nations or fishing entities in the Indian Ocean Region, for example, have significant implications for the development of fisheries of the riparian nations, particularly on the status of targeted and dependent stocks. The conditions of work of the crew on board these distant-water fishing vessels raise important labour and human-rights issues.

2.5 *Coastal environmental degradation*

The health of the marine environment has an important bearing on fisheries management and the allocation of access rights to fisheries resources. The implications of degraded marine ecosystems include a decline in resource productivity and health risks to both fishers and consumers. Marine pollution and ineffective coastal area management impose significant external costs on coastal fisheries, like, for example, mangrove destruction and construction of large dams. The degradation of the marine environment also requires a regional and community-oriented approach.

3 Regionalization Initiatives: the Rise of the IOR-ARC

The Indian Ocean Rim Association for Regional Co-operation (IOR-ARC), was formed in 1997 by 14 riparian States in the region. The IOR-ARC has aspirations to become like the Association of Southeast Asian Nations (ASEAN) or the Asia-Pacific Economic Co-operation (APEC). Its aims are: "to

promote sustained growth, balanced development, liberalization and to foster closer co-operation in global economic issues and human resources development".

At the same time, NGOs from seven Indian Ocean countries formed a Civil Society Indian Ocean Network (CSIONET). The CSIONET has, as its objective, "sustainable development, economic progress, participatory democracy and environmental equity in the Indian Ocean Region". The CSIONET hopes to function as a dialogue partner with the IOR-ARC.

A proposal on conservation of fish resources in the Indian Ocean Region was approved at the IOR-ARC's Ministerial Conference held at Muscat, Oman, in April 2001. IOR-ARC also aims at maximizing the benefits of globalization to the Indian Ocean Rim countries. This could lead to an expansion of industrial and service-sector activities in the coastal areas, which will have significant positive and negative implications for the coastal marine environment and the livelihoods of people who are dependent on it.

At the sectoral level, the establishment of the Indian Ocean Tuna Commission (IOTC) in 1996, with the objective of optimum utilization of 16 tuna and tuna-like fish in the IOR, is also highly significant. The IOTC has management powers and it is the first of its kind among the regional fisheries organizations under the FAO Constitution. With the likelihood of the imminent ratification of the 1995 UN Fish Stocks Agreements, regional fisheries management organizations (like the IOTC) will become quite powerful. IOTC already has provisions to allow NGO participation at its meetings, if member countries do not object.

4 Objectives

Keeping in mind this background and the array of issues of consequence to coastal fishing communities, the ICSF is planning to hold an international meeting in Chennai, India from 9 to 13 October, 2001, with the following objectives:

- to create an awareness among the participants about the biogeographical and cultural unity of the riparian communities of the Indian Ocean Region;
- to highlight the importance of sustaining the livelihoods of the artisanal and small-scale fishing communities dependent on marine

fisheries in the emerging context of new developments in fisheries in the Indian Ocean Region;

- to forge greater unity between communities to:
 - advocate for participatory regional and bilateral arrangements among the riparian nations of the Indian Ocean for access to, and responsible management of, fisheries resources, consistent with the UNCLOS;
 - discuss mechanisms for conflict resolution and conflict reduction in the Indian Ocean Region and for humane treatment of fishworkers; and
 - develop a shared Vision Statement for responsible utilization of fishery and coastal resources in the Indian Ocean Region.

5 Participants

The conference will invite at least two representatives of artisanal fishing communities or fishworker organizations from a selected number of countries in the region. There will also be representatives of regional and international organizations, as well as national fisheries agencies.

Following are the countries/organizations from which participants were invited. (The actual participants are listed in Annex II.)

Southern and Eastern Africa

- 1.Mozambique
- 2.Kenya
- 3.Tanzania
- 4.South Africa

Western Indian Ocean

- 5.Madagascar
- 6.Mauritius
- 7.Seychelles
- 8.Maldives

Southeast Asia

- 9.Indonesia
- 10.Malaysia
- 11.Thailand

South Asia

- 12.India
- 13.Sri Lanka
- 14.Pakistan
- 15.Bangladesh

Australia

- 16.Australia

International Civil Society Organizations

17. CSIONET
18. Greenpeace International
19. WWF
20. CFFA

International Trade Unions

21. ITF

Multilateral Agencies

- 22.FAO
- 23.BOBP
- 24.EC
- 25.IOR-ARC
- 26.IOTC
- 27.SADC
- 28.ILO
- 29.UNEP

Forging Unity: The Agenda

John Kurien *

Abstract

This introductory speech situates the troubled context in which the Indian Ocean Conference was held and the need for togetherness and synergy, drawing on a common labour-oriented and community-centred perspective on fisheries.

Though the Indian Ocean is one of the few oceans with untapped marine resource potential, it is also a region with one of the most poorly managed fisheries in the world. There is a need to take the fisheries out of the hands of the relatively few large companies that control them, and hand them over to the coastal communities of small-scale fishers who are dynamically evolving new capabilities.

Such redistribution of resources has to be accompanied by a fundamental change in the approach to management, to ensure that the mistakes of large-scale fisheries are not repeated by irresponsible and destructive small-scale fisheries.

As 'beacons of the sea', the communities have a commitment to the sustainable use and protection of marine resources. This involves developing and instituting new mechanisms for communities and national authorities to work together.

The Indian Ocean Conference is expected to work towards a 'shared vision' for forging a future for the coastal communities of the Indian Ocean Region.

Keywords

Communities. Oceans. Unity. Fishworker. *Samudra*. Seafaring peoples. Illegal, unreported and unregulated (IUU) fishing. Distant-water vessels. Non-selective, destructive fishing practices. Coastal marine commons. Sustainable fisheries. Beacons of the sea.

Prof. Muthukrishnan, Ms. Nita Chowdhury, Prof. Rajagopalan and my esteemed delegate friends from around the Indian Ocean Region and other parts of the world,

We meet together here in very troubled times. It would not be inappropriate to say that one wrong step by some world leaders can be one big leap into a very bleak future for humankind. These are the times when we are looking for symbols that unite human beings and try to reject those that divide us. It is in this context that the purpose of our small meeting here attains added significance. We are here to talk about communities, about oceans and about the integral need to forge unity. What is common to communities, oceans and the act of forging unity is that they are all very dynamic and highlight togetherness and synergy, rather than division

and wasteful dissipation of energy. This is the need of the hour, and, in our own little way, this is what we are gathered here to do.

For both ICSF and IOI, the issue of community and oceans has particular significance. The IOI emphasizes the central importance of the coastal fishing communities in harvesting and sustaining the world's precious marine environment, and supplying a vital source of food to the world's population. The IOI's compilation on "Voices of the Oceans" was dedicated to coastal communities who were rightly referred to as an endangered species. For ICSF, a 'community-based' approach to development, with the labouring family unit at the centre, is of prime importance. In this context, men, women and children play complementary roles of equal importance, now and into the future. The

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gender-neutral term 'fishworker', coined for the 1984 Rome Conference, stems from this labour-oriented and community-centred view.

The context of the Indian Ocean or *samudra*, is also of crucial importance to both IOI and ICSF. It is in the Indian Ocean that many of the world's seafaring and fishing traditions have their origins. For millennia, seafaring peoples from the Indian Ocean Region have travelled, settled, struggled, traded, fished and interacted. From the Swahili coast to the Saurashtra and Sulawesi coasts, from the Malabar coast to the Malacca coast, lands separated communities. The oceans brought them together and often united them.

As we meet today, the region is beset by problems that have a negative impact on its coastal communities and marine living resources. While the Indian Ocean is described as one of the few oceans with untapped marine resource potential, it is also, without doubt, a region with one of the most poorly managed fisheries in the world.

The Indian Ocean is riven with illegal, unreported and unregulated fishing activities. Fishing crew on such vessels and other distant-water vessels are subject to the most inhumane and degrading treatment. At another level, small-scale fishers who find themselves in neighbouring waters are summarily thrown into jail, or worse, shot and killed.

Meanwhile, coastal resources and the fragile marine environment are being destroyed by non-selective and destructive fishing practices; encroached upon and damaged by unplanned tourist developments, intensive coastal aquaculture, and chemical pollution from land and sea, to name but a few of the negative externalities.

To a great extent, large-scale fisheries and destructive fishing practices have ruined the coastal and marine commons. Today, we need to take our fisheries out of the hands of the relatively few large companies that control them, and hand them over to the coastal communities of small-scale fishers who are dynamically evolving new capabilities.

But let us remember that a change of scale and level of technology alone is not sufficient. It is paramount that redistribution of resources has to be accompanied by a fundamental change in our approach to management. We must not allow the mistakes of large-scale fisheries to be repeated by irresponsible and destructive small-scale fisheries.

When we talk about non-destructive, selective and responsible fishing technologies and practices, and co-management of resources, we are really talking about 'reinventing' sustainable fisheries, and, in one sense, going back, searching for our roots, to be able to move into a brighter future. This needs new processes and new institutions. It also needs a new vision. We need to chart out how the transformation process should take place, and, once achieved, how we can sustain and share our resources equitably.

In such a scenario, the role and responsibilities of both the communities and the nation-States needs to be carefully defined. What role should the State play? Given its jurisdiction over the resources and marine territories, the State has a fundamental responsibility to ensure that access to resources is fair and equitable. The communities, on the other hand, as the 'beacons of the sea', have a commitment to its sustainable use and protection. The merging and sharing of these mutual concerns is the only way forward.

This means developing and instituting new mechanisms for communities and national authorities to work together. Instituting such changes requires clarifying what we mean by 'community' and the respective roles and responsibilities of the actors in the community: the unions, the producer organizations and other representative bodies. It also requires a rethink of community structure and the respective roles of the men and women in the community and the family.

Over the next five days, we will be looking at these and other issues, analyzing the problems, and sharing our concerns. We will also be working towards a 'shared vision' for forging a future for the coastal communities of the Indian Ocean.

It is a daunting agenda that we have ahead. It is certain that we will not be able to develop a blueprint for action. Nor do we need one. What is more important is that we make the first step in the right direction. That is the big leap in our mindsets that we are challenged to make together.

Your presence here is adequate proof that you are willing to put behind the many social, cultural, religious and nationality differences that separate us, and accept this challenge of coming together to forge unity.

Thank you for making this possible.

Managing the Indian Ocean Fisheries: A Collective Responsibility

Nita Chowdhury *

Abstract

The third largest ocean in the world, the Indian Ocean and its adjacent seas have the most number of active fishermen in the world, about 15 mn. After the Pacific, the Indian Ocean has the largest number of commercial marine species and the largest share of full-time fishers in the world. In fish diversity too, the Indian Ocean is second only to the Pacific. However, there has been a progressive decline in fish production in the Indian Ocean, probably due to climatic conditions.

Countries in the Indian Ocean Region face considerable difficulties in the development and management of their marine fishery resources. Though they share a heritage of coastal fishing, seafaring and maritime trade, some of the fisheries management issues have now acquired a regional dimension and, therefore, require a community approach to management.

There is a need to create awareness about the biogeographical and cultural unity of the riparian communities of the region, to highlight the importance of sustaining the livelihoods of the artisanal and small-scale fishing communities, and to forge greater unity between communities. As small fishing vessels have significantly improved their range of operations, governments in the Indian Ocean Region should start negotiating fisheries agreements with each other. They also need to adopt international fishery and related Conventions and Agreements.

The export of fish and fish products is very important for many developing countries in the region, but the greatest denial of market access for these products in the future could come from food safety standards.

Efforts should be made to harmonize rules, regulations and procedures in environmental protection, capture fisheries enforcement and quality assurance of fish and fishery products for domestic consumption and export.

Keywords

Indian Ocean. Capture fisheries. FAO. Fishing pressure. Territorial sea. High seas. Maritime trade. Riparian communities. Conventions. Agreements. Bay of Bengal Programme. FAO Code of Conduct for Responsible Fisheries. Non-tariff trade barriers. MSC. Environment and labour standards.

Prof. Muthukrishnan, Deputy Director, Indian Institute of Technology, Chennai; Prof. R. Rajagopalan, Centre Director, International Ocean Institute Operational Centre, Chennai; Dr. John Kurien, Centre for Development Studies, Thiruvananthapuram; Mr. Sebastian Mathew, Executive Secretary, ICSE; distinguished delegates from the Indian Ocean Rim countries and other parts of the world; distinguished scientists and fisheries ad-

ministrators from Chennai; distinguished members of the press; ladies and gentlemen, I am indeed delighted to be here at the inauguration of the International Conference on the Indian Ocean—*Forging Unity: Coastal Communities and the Indian Ocean's Future*. Delighted really, because, for one reason, this conference is being held in the beautiful coastal city of Chennai, the gateway to the south of India and part of the legendary Coromandal coast, and,

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for another, it is being held at a time when fisheries management has become very complex and the livelihood support to coastal fishing communities is being threatened.

As we are aware, the oceans cover three-fourths of the surface of the earth. In the history of humankind, we have enjoyed the benefit of the oceans in various ways, such as food, water, weather and maritime transportation. The Indian Ocean, the third largest ocean in the world, and its adjacent seas have the largest number of active fishermen in the world, about 15 mn. After the Pacific, the Indian Ocean accounts for the largest number of commercial marine species and the largest share of full-time fisher population in the world. In fish diversity too, the Indian Ocean is second only to the Pacific. Between 1950 and 1998, the population of the Indian Ocean Region doubled to 2 bn. Marine fish production increased eightfold, to about 8 mn tonnes. India stands as the biggest producer of fish in the Indian Ocean Region and it also accounts for the largest number of fishworkers.

However, with respect to marine capture fisheries, the trends in recent years have been disturbing. The global capture fisheries production decreased from a figure of 86 mn tonnes in 1996 and 1997 to 78 mn tonnes in 1998 (The State of World Fisheries and Aquaculture, p. 142, FAO, 2001). The Indian Ocean is no exception to this progressive decline in fish production. The decline appears to have been caused by climatic conditions. Recent reviews on the state of world marine resources by the Food and Agriculture Organization of the United Nations (FAO) have also shown that, among the major fish stocks, an estimated 44 per cent are fully exploited and have reached, or are very close to, their maximum catch limit, with no room expected for further expansion. About 16 per cent of the marine resources are overfished and another 6 per cent appear to be depleted, with a resulting loss in total production, not to mention the social and economic losses derived from the uncontrolled and excessive fishing pressure.

A close perusal of the reports published by the FAO and other agencies shows that the Indian Ocean countries face considerable difficulties in the development and management of their marine fishery resources for a host of reasons. The fishery resources are diverse, as are the fishery technologies and systems. Artisanal and small-scale fishermen operate from thousands of landing places dispersed along the coast, and live within socially and culturally disparate communities, in an unrivalled mosaic of cultural and ethnic fabrics. The pressure

on the environment is both cumulative and complex, and grows as the resources are rapidly depleting. There are also escalating conflicts between different user groups, such as those relying on coastal resources for their livelihoods and those interested in further industrial expansion.

I would like to flag some of the major issues that would require the attention of this conference during its deliberations over the week.

The seas have historically performed two important functions: first, as a medium of communication, and, second, as a vast reservoir of resources, both living and non-living. Both these functions have stimulated the development of legal rules. The seas were, at one time, thought capable of subjection to national sovereignties. However, the freedom of the high seas became a basic principle of international law, although not all seas were characterized thus. It was permissible for a coastal State to appropriate a maritime belt around its coastline as territorial waters, or territorial sea, and treat it as an indivisible part of its domain. Gradually, there came a shift in the law of the sea towards the enlargement of the territorial sea, coupled with the continual assertion of jurisdictional rights over portions of what were regarded as high seas, reflecting a basic change in emphasis in the attitude of States to the sea.

Although countries in the region share a long heritage of coastal fishing, seafaring and maritime trade, today, more than ever before, some of the fisheries management issues have acquired a regional dimension and, therefore, require a 'community' approach to management. Modernization and expansion of fisheries, growing conflicts, distant-water matters, external threats and coastal environmental degradation are some of the issues that need immediate attention. This conference on the Indian Ocean fisheries, could not, therefore, have come at a more appropriate time. A time when there is a need to create an awareness about the biogeographical and cultural unity of the riparian communities of the Indian Ocean Region, to highlight the importance of sustaining the livelihoods of the artisanal and small-scale fishing communities, and to forge greater unity between communities.

At various international forums, concern has been expressed about the overexploitation of important stocks, damage to ecosystems, economic losses and issues affecting fish trade. All these have threatened the sustainability of fisheries. The 19th Session of the FAO Committee on Fisheries, held in March 1991, recommended that FAO should develop the concept of responsible fisheries and elab-

orate a code of conduct toward this end. The Code of Conduct for Responsible Fisheries finally came into being on 31 October 1995 at the 28th session of the FAO Conference in Rome.

The Code is global in scope. It is directed toward members and non-members of FAO, fishing entities, different organizations involved with issues of fishworkers, fishers, people engaged in the processing and marketing of fish and fishery products—in short, all concerned with conservation of fishery resources and management and development of fisheries. The Code is voluntary, but certain parts of the Code reflect, and include, major articles and provisions from a number of global UN Conventions and Agreements.

The 1990s have witnessed many other international agreements and accords relating to the intentions of the international community to achieve sustainable fisheries and to which most of the Indian Ocean countries have been parties. These agreements represent milestones in international efforts over many years and include Chapter 17 of Agenda 21 of the UN Programme of Action, which includes programmes relating to coastal areas and the oceans; the 1992 International Conference on Responsible Fishing (held in Cancun, Mexico) and the 1993 Agreement to promote compliance with International Conservation and Management Measures by fishing vessels on the high seas.

The Indian Ocean countries need to adopt the international fishery and related Conventions and Agreements (for example, the UN Fish Stocks Agreement, and Compliance Agreement). It is also in our strategic interest to do so. Due to the straddling and migratory nature of valuable stocks like tuna, it is also important to take active part in regional fisheries bodies that will help to widen the use of our national research and technical expertise in the region. Our fishery policies have, thus far, kept us as an insular region. This may have been based on sound reason in earlier times, but it can be counterproductive in the emerging globalizing scenario.

According to FAO, the value of world fishery product exports in 1998 stood at US\$49 bn. The developing countries contributed to 48 per cent of the total. The export of fish and fish products is thus very important for many maritime developing countries in the region. While about 40 per cent of global fish production enters international trade, only about 6–8 per cent of forest products enter international trade. The net foreign exchange earnings of developing countries in 1997 from fish and fish products stood at about US\$16 bn, which, ac-

ording to FAO, is more significant than the combined net export earnings from coffee, tea, rice and rubber.

However, in the fast-developing international scenario of trade and food security, non-tariff trade barriers are likely to play a major role. In this context, I may mention the initiatives of the Marine Stewardship Council (MSC), a joint initiative of the World Wide Fund for Nature and the multinational giant, Unilever, which focuses on sustainable fishing. The MSC was launched in early 1996 mainly with the purpose of designing and implementing market-driven incentives for sustainable fishing. It is still unclear, or too early to say, how the market will respond to such initiatives, but, in the light of growing interest in linking environment and labour standards to international trade, these developments could be seen as an opportunity as well as a matter of concern. Environmental and labour standards could complement the standards for food safety, which are strictly adhered to in the US, EU and the Japanese markets. In fact, the greatest denial of market access for fish and fish products from developing countries in the future could be under the mantle of food safety standards. I would urge the participants of this conference to discuss these issues and arrive at some strategy to safeguard the interests of the small-scale fishworkers in the region.

As small fishing vessels have significantly improved their range of operations, governments in the Indian Ocean Region should start negotiating fisheries agreements with each other. This also brings out the fact that fishing at sea has become one of the most dangerous occupations in the world. The data gathered from countries that keep accurate records show that occupational fatalities in the fishing industries of those countries far exceed the overall national averages. I am told that the Bay of Bengal Programme, in association with the FAO, is now holding a regional workshop on this issue. The fact that many factors contribute to the accidental international movement of fishermen across boundaries must also be recognized. It may be worthwhile to adopt a judicious mix of compassion, recognition of traditional rights and development of legal regimes to facilitate the formal movement of small-scale fishing vessels, which could contribute significantly to resolve the problems in the Indian Ocean Region.

The importance of small-scale fisheries—50 per cent of the tuna production in the Indian Ocean Region comes from this sector—must be recognized. Governments should, on behalf of the small-

scale fishing industry, negotiate fisheries agreements with other countries in the Indian Ocean Region. A level playing field should be created to allow the small coastal nations to enjoy the fruits of the Indian Ocean. Access arrangements should be subject to licensing requirements. As for traditional rights, there are legal measures to accommodate such fishing rights that fall outside national jurisdiction. Successful fisheries agreements can be negotiated between countries with excess capacity in small-scale fisheries, such as Sri Lanka and India, and with other countries such as Seychelles, Madagascar, Mozambique and Somalia. These are some of the issues that the regional fisheries bodies like the Indian Ocean Tuna Commission and the Bay of Bengal Programme, as inter-governmental organizations, will need to address.

Fish is a highly perishable food, requiring proper handling and processing, if it is to be utilized in a cost-effective and efficient way for the benefit of those who rely on it for nutrition or income. FAO estimates that up to 20 mn tonnes of fish are wasted by being discarded at sea immediately after being caught. Globally, the demand for fish is growing, whereas many natural fisheries are already heavily exploited or overexploited. The

extra demand for fish in the future could be met, in part, by reducing post-harvest losses, increasing the share of underutilized species, and increasing production from aquaculture.

The existing national fisheries management institutions should be strengthened in order to carry out these important tasks more effectively. Efforts should also be made to harmonize rules, regulations and procedures in environmental protection, capture fisheries enforcement as well as in quality assurance of fish and fishery products for domestic consumption and export. At the subregional and regional levels, national efforts could be strengthened through the subregional/regional fishery bodies. The framework for regional cooperation is already in existence in the region, both within and outside the framework of the UN system, and it should be further strengthened.

In conclusion, I, once again, thank the organizers of this conference for inviting me to this function, and I wish you all a highly productive week of deliberations, and hope that the output of the conference will have some positive impacts on the livelihood security of the millions of small-scale fishers who weather the perils of the sea to ensure our nutritional security.

Ocean Governance and the Fishing Village

Elisabeth Mann Borgese *

Abstract

Ocean governance is based on both a legal and an institutional framework, through legal and paralegal instruments and specialized agencies and programmes of the United Nations. Such an institutional framework must be comprehensive, consistent, trans-sectoral or multidisciplinary, participational and bottom-up rather than top-down.

Following Gandhi's vision of the oceanic circle, we can project a global social order originating from the individual through the village and the community of villages, where the outermost circumference will not wield power to crush the inner circle but will give strength to it and will also derive from this, its own strength. This keynote address to the Indian Ocean Conference views the role of the fishing village in such a global context.

Rather than rely solely on science, we need to rely on intuition, native wisdom and experience, ethics and equity, all of which can be enhanced through blending with modern science and technology, if they can be grafted onto indigenous technology, which would make it socially and environmentally sustainable.

In anthropological terms, the fishing village is one of the oldest forms of social organization, based on a lifestyle that reflects a special relationship between humans and the ocean. To face this ocean, fishing activities have to be co-operative, not competitive, and the distribution of the common resource has to be equitable, for were it not, co-operation would disintegrate.

Community-based co-management is emerging in many parts of the world, and may take as many forms as there are villages, depending on culture, existing institutional infrastructure and stages of development. To be truly integrated, it must comprise all village activities. Towards this end, this address proposes that the municipal council of a coastal village or town elect a Marine Resources Council.

Village empowerment through integrated coastal management and community-based co-management is today the best countervailing force against market-driven globalization.

Keywords

Ocean governance. UNCLOS. UNCED. IMO. IOC. Oceanic circle. Fishing village. Native wisdom. Indigenous technology. Common property resource. Community-based co-management. Integrated coastal management. Ecosystem-based fishery. Marine Resources Council.

I.

It is with deep regret that I have decided to cancel my trip to India and my personal participation in your important conference. It certainly is not fear that keeps me from visiting your part of the world at this time. It is the concern that, considering the terrible uncertainty overhanging everything, including international air traffic, I would risk remaining stuck at some airport, which would force me to cancel a series of other obligations, and I would hate to have to do that. Our agendas are

full, and we all intend to continue to work for what we believe, although sometimes this is very difficult. Who cares about dying corals when people are butchering one another?

Just recently, I came across a beautiful passage that answered this question:

...Dead corals are the victims of the injustices we continue to ignore, of greed, of selfishness and of the abdication of moral and ethical responsibility. It is an

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act of genocide against the corals and so against species who depend on them, including, ultimately, humans. The coral polyp's own world mirrors the human experience—the cries for freedom from foreign debt, poverty, starvation, the cries to change lifestyles, not the climate, the cries to stop burning fossil fuels. To ignore the death of coral reefs is, I believe, to ignore the cries of many of the world's people of today, at the peril of our future generations and our planet.

(S. Rayner, Mapping institutional diversity for implementing the Lisbon Principles, *Ecological Economics*, 31, 259-274, cited in Azfar Bin Mohamad Mustafar, *Ocean Governance*, thesis for Master of Science in Maritime Affairs, World Maritime University, 2001.)

The International Ocean Institute (IOI) has not only done voluminous work on the theory of ocean governance, but it has also been deeply and practically involved in action to enhance the realization of this theory:

- At the level of the local community, we are working with villages and trying to contribute to improving their livelihoods.
- At the national level, many of us are advisers to governments on the issues of marine policy; and many of our Operational Centres have conducted training courses for coastal managers for their governments.
- At the regional level, we are heavily involved in the process of revitalization of the United Nations Environment Programme (UNEP) Regional Seas Programme, that is, the expansion of its scope and its functions, including capacity-building through education and technology co-operation and transfer.
- At the global level, IOI has been instrumental in the establishment of the General Assembly's Consultative Process (UNICPOLOS), as well as in the evolution of the International Seabed Authority.

The essence of our theoretical work on ocean governance can be summarized as follows:

First, ocean governance is based on a *legal framework* consisting of the United Nations Convention

on the Law of the Sea (UNCLOS, the Constitution for the Oceans), enhanced and kept up-to-date by the Conventions, Agreements, Protocols, Programmes and Codes adopted by the UN Conference on Environment and Development (UNCED) in Rio de Janeiro, 1992, and in its wake. All of these more recent legal and paralegal instruments have important oceanic dimensions.

Second, to implement laws, regulations and agreements, an *institutional framework* is needed. This framework is quite comprehensive, consisting of the Specialized Agencies and Programmes of the UN, in particular, the Intergovernmental Maritime Organization (IMO), the Intergovernmental Oceanographic Commission of UNESCO (IOC), the Food and Agriculture Organization of the United Nations (FAO), UNEP, with its Regional Seas Programmes, and half a dozen others.

Other important components of this institutional framework are the institutions created by UNCLOS, that is, the International Seabed Authority; the International Tribunal for the Law of the Sea, the Commission on the Limits of the Continental Shelf, and the Meeting of States Parties.

Third, there are the institutions created in the wake of UNCED, that is, the Secretariats of the Climate and Biodiversity Conventions and the Co-ordinating Office for the Global Programme of Action for the Prevention of Pollution from Land-based Activities (GPA).

Fourth, there are three institutions, created by the UNCED process, intended to streamline and hold the whole system together: The Subcommittee on Oceans and Coastal Areas of the Administrative Committee on Co-ordination (ACC/SOCA), the Commission on Sustainable Development (CSD), and, above all, the Consultative Process of the General Assembly (UNICPOLOS).

Last but not least, there is the whole nongovernmental sector and civil society, comprising local communities, major groups or stakeholders, such as science and industry as well as nongovernmental organizations (NGOs). This whole institutional framework is as yet somewhat amorphous and poorly co-ordinated raw material or building blocks for an architecture yet to be designed.

A vision, however, already exists. It has been evolving since the days of UNCED, the Brundtland Commission and its 1987 Report, *Our Common Future*. There is today universal agreement that this institutional framework must be comprehensive, consistent, trans-sectoral or multidisciplinary, and participational, bottom-up rather than top-down:

- ‘comprehensive’ means that it must reach from the local level of the coastal community through the levels of provincial and national governance to regional and global levels of international organization;
- ‘consistent’ means that regulation and decision-making processes and mechanisms at all levels of governance must be compatible;
- ‘trans-sectoral’ or ‘multidisciplinary’ means that activities in the ocean environment cannot be considered separately, sector by sector, but must be seen as interactions; and
- ‘participational’ means that regulation must not be imposed by central or federal governments, only to be ignored or flouted by local communities whose livelihoods depend on the ocean, but that these communities must be involved in the making of regulation and management. Thus, the notion of co-management is gaining ground globally.

In my two most recent books (*Ocean Governance and the United Nations*, 1996, and *The Oceanic Circle*, 1998), I have tried, by way of illustration, to design such a system in some detail. My inspiration came from Gandhi’s magnificent vision of the majesty of the oceanic circle, projecting a global social order reaching from the individual through the village and the community of villages to the global level, where the outermost circumference will not wield power to crush the inner circle but will give strength to it and will also derive from this, its own strength.

I want to view the role of the fishing village in this global context.

II.

We all know that the fishing industry is in some sort of crisis in most parts of the world. A new pattern of population distribution has resulted from the largest migration in human history: the migration from inland areas towards the coast, and from the village to the sprawling mega-city. Over 60 per cent of the world’s population now resides in coastal areas, including coastal mega-cities; and this proportion of a growing world population is expected to rise to 80 per cent during this century. The coastal area has become the world’s most densely populated area. At the same time, it is also the world’s most vulnerable area, exposed, as it is,

to floods, storms, tsunamis and other natural or man-made disasters.

Obviously, this new pattern of population distribution is putting unbearable pressure on coastal oceans. Physical erosion of coastlines, chemical pollution of coastal waters and habitat destruction are phenomena common to most coastal areas. Technological development aggravates the problems. Industrialized hunting is a contradiction in terms. Modern trawlers, longliners, drift-nets—50 km long or even longer—scoop up the living substance of the oceans faster than it can be reproduced. The competitiveness of the Western market system does the rest, setting up the industry in an unfair competition with the inshore traditional fishers and resulting in perversities such as the by-catch problem. Thus, shrimp trawlers in the Caribbean—just to use an example—bring up 12 kg of unwanted by-catch for every kg of shrimp. While shrimp fetches a high price, the by-catch, whether dead or dying, is unceremoniously thrown back into the sea. And this in a world where almost half of the population is undernourished or starving.

Finally, there is climate change, and we do not really know what it does to the ocean’s productivity, nor do we understand how its impact interacts with the impact of human activities. We know that climate change has decimated life in the oceans at various times in geological history, long before humans appeared on the scene. On some occasions, the great dying in the oceans went hand in hand with increased productivity and the emergence of many new species on land. It is not too surprising, therefore, that recent imagery taken from satellites indicates a greening of some land, not by way of geographic expansion but by intensification and extension of the growing season.

We know so little. If Western scientists, until recently, could boast that their mathematical models could calculate and project the limits of sustainable yield, they know today that they cannot. The behaviour of complex systems is not linear and predictable. The more data you add to the model, the greater the uncertainty it will produce.

Fisheries constitute extremely complex systems, comprising biological, chemical, physical, meteorological, social, economic, technological, cultural and legal factors, among others. To place the fishing village into this context is a rather daunting task.

Rather than depend only on science, we need to rely on intuition, on native wisdom and experience, on ethics and equity—all of which, however,

can be enhanced through blending with modern science and technology, if they can be grafted onto indigenous technology, which would make it socially and environmentally sustainable.

III.

Many problems, which cannot be solved in a large-scale context, can, instead, be solved at the level of the local community. The small community facilitates forms of direct democracy, with the full participation of all stakeholders; it is easier to create a sense of individual and collective responsibility, a feeling of commonality of interests. In Gandhi's sense, the village—which may also be a district of a mega-city—is the real core of governance. It might be a community, ideally, of not more than 3,000 people—roughly the number of people an individual gets to know during a lifetime, no matter whether (s)he lives in a village and never moves from it, or whether (s)he is a jetsetter and keeps moving around the globe.

If the village does not function properly, the nation will not function, the region will not function; the global community will not function.

In anthropological terms, the fishing village is one of the oldest forms of social organization, based on a lifestyle that reflects a special relationship between humans and the ocean. The ocean is both benign, a provider of food, and antagonistic, a destroyer of human life or even of the village in its entirety. The human being is so small and helpless in confronting the mighty ocean in fear, awe, reverence, if also in a spirit of mythmaking and superstition. To face this ocean, fishing activities have to be *co-operative*, not *competitive*, and the distribution of the common resource has to be *equitable*, for were it not, co-operation would disintegrate.

A common resource, co-operatively managed and equitably distributed, will not be destroyed, whether by overfishing, which is a consequence of competition, or by pollution, which is a waste. Wisdom, accumulated by the village through centuries or even millennia, will inspire self-regulation to prevent both.

Fishing, on which the fishing village depends, is not the only activity required for the sustainability of the village. There must be builders, food processors, metal workers, gardeners, agriculturists, animal husbanders, cooks, scientists, educators, doctors, traders, artists and spiritual leaders. Fishing activities must find their place among all these other activities and be harmonized with them in what is now called horizontal integration.

Nor can the village stand alone. Developments beyond its control, from the hinterland as well as from the ocean, may interfere and frustrate the application of its wisdom and self-regulation. Its decisions, therefore, must be harmonized with the decisions of larger communities, comprising more villages, at the provincial, national and international level. This is what today is called vertical integration.

Horizontal integration plus vertical integration give rise to a system, which today is called community-based co-management. It is emerging in many parts of the world, including the Indian Ocean Region. It may take as many forms as there are villages, and the form it will take depends on culture, existing institutional infrastructure and stage of development, but its general features could be articulated as follows:

1. The municipal council of a coastal village or town shall elect a Marine Resources Council, composed of 15 representatives of the port authority, shipowners, fishing associations, maritime industries, the tourist board, coast-guard, research institutes, NGOs, consumer co-operatives and the insurance industry.
2. The Marine Resources Council shall deliberate on all matters affecting the sustainable development of marine resources, the protection of the marine and coastal environment, research and training in ocean affairs, and shall prepare legislation thereon for the Municipal Council.
3. The Marine Resources Council shall prepare short-term (one-year) and medium-term (five-year) plans for sustainable resource development and the protection of the marine environment, and submit them, through the Municipal Council, to the Provincial Government.
4. The Marine Resources Council shall be responsible for the local implementation of Chapter 17 of Agenda 21 and the Global Programme of Action (GPA).
5. The Marine Resources Council shall meet as often as necessary.
6. Municipalities, through their Marine Resources Councils, shall co-operate within their provinces and with municipalities of

neighbouring provinces as well as with municipalities of neighbouring countries affecting their common ecosystems. Appropriate provincial, national or international encounters shall be arranged for this purpose.

7. A forum comprising representatives of local communities and provincial and national governments shall be established for joint deliberation and decisionmaking on ocean and coastal issues.

IV.

Integrated coastal management, embodied in community-based co-management structures, will serve a number of purposes:

- It will enhance self-regulation and self-enforcement of fisheries.
- Self-regulation and self-enforcement in an integrated ecosystem-based fishery will eliminate the by-catch problem. In an ecosystem-integrated fishery, the problem simply does not arise. While technological improvements, such as turtle excluder devices (TEDs), can reduce the capture of protected species, a village-centred, co-operative, ecosystem-integrated fishery need not be strictly species-targeting. By-catch of fish not fit for human consumption can be processed by the village community for fish feed in aquaculture, fish-meal or fertilizers.
- The coastal zone includes, on the seaward side, the entire exclusive economic zone (EEZ), out to its 200-nautical mile limit. Coastal villages could declare trawling as well as longlining as destructive fishing practices, and, through the co-management system, press for their elimination from the EEZ. This would be the only effective way to eliminate the conflict between inshore and offshore fishers, which, in many cases, is a conflict between indigenous fishers and multinational companies.
- Community-centred co-management will facilitate co-operation between scientists and fishers (through horizontal integration). Fishers thus may participate in fisheries research, encouraging the blending of modern science and traditional wisdom.
- Co-operation between local communities and national governments in common decision-making forums (vertical integration) will facilitate the blending of indigenous technology, contributed by the local community, and high technology, contributed through national governments, into so-called ecotechnology, which should be socially and environmentally sustainable.
- To be truly integrated, coastal management, through community-based co-management, must comprise *all* village activities. It is not realistic to separate marine and coastal activities from others, including agriculture, freshwater management, building, women's organization, education, public health and financial administration—anything that contributes to the well-being of the village community.
- Horizontal integration will include, *inter alia*, local branches of international oil companies among the stakeholders, in locations where there is drilling for hydrocarbons. In the context of contemporary management theory, multinational companies, too, tend to decentralize and to delegate much more decision-making power to their various branches. The local offshore oil manager has a stake in village consensus and harmonization of conflicts of uses. This may contribute to the mitigation of conflicts between the hydrocarbon industry, fisheries and tourism, at the local level.
- You will have noted that, in the horizontal integration among the stakeholders, I have included the insurance industry. This was not done casually. Coastal managers and the insurance industry have a common interest in risk reduction and poverty alleviation in coastal areas. The future of the insurance industry, in fact, depends today on making the coastal zone insurable. At the same time, the insurance industry can make major contributions to integrated coastal management. We have elaborated on this elsewhere. Here it may suffice to just mention these contributions under the following headings: (1) transfer of advanced risk assessment technologies; (2) advice on building standards and zoning; (3) technology and coastal engineering risk assessment; (4) community training in disaster preparedness and response; and (5) assis-

tance in introducing micro-mutual insurance schemes, linked to micro-loan schemes (like Bangladesh's Grameen Bank experiment).

- Integrated coastal management must contribute to the alleviation of poverty and the raising of living standards in coastal villages, including fishing villages, or it will not be sustainable.
- Village empowerment through integrated coastal management and community-based co-management inserts itself into the global sociopolitical trend towards decentralization and increased local autonomy (often driven by cultural, including religious, linguistic and

ethnic factors), within a broader global trend towards unification within larger than national, often regional, organizations, driven by ecological, economic and technological factors.

- Village empowerment through integrated coastal management and community-based co-management is today the best countervailing force against market-driven globalization, which makes the rich, richer and the poor, poorer. This has reached the limits of tolerability. Building a better way of ocean governance, starting from the fishing village, will contribute to building a better world.



Indian Ocean Coastal Communities: Sculpting a Vision for the 21st Century

*Maizan Hassan Maniku **

Abstract

Over the second half of the last century, the political and economic changes that have occurred within the Indian Ocean Region have drawn international attention to its emerging potential. The Indian Ocean Region is quite unique in many ways; it is a tropical ocean, with a multitude of ancient cultures, political structures and both complementary and competing economies. This recently realized potential would offer the Indian Ocean coastal States, international parties and Western countries a multiplicity of opportunities to develop close links and bilateral trade relations within and outside the region.

This paper tries to outline the rich diversity that has shaped the Indian Ocean communities over the millennia, and looks at fisheries resources as a commodity, and assesses its impact on coastal communities, specifically of the Maldives, in achieving sustainable livelihood assets in the future.

In the recent past, alternative forms of governance have proliferated, from local to global scales. Regions and communities have emerged with considerable control over their own affairs, though still constrained by the impacts of decisions taken by the highly industrialized countries. Globalization has taken national and regional resources to the international agenda, and has transformed their values to economic gains.

Global governance needs to be based on a federation of regions that effectively foster cooperation, security and environmental health, through new channels of communication, education and the democratic process, undercutting any reappearance of authoritarianism. In sculpting a vision for the 21st Century, Indian Ocean coastal communities need to take full advantage of this new paradigm.

Keywords

Indian Ocean Region. History. Maldives. Fisheries resources. Sustainable livelihood assets. Coastal communities. Policy reform.

1 Historical Perspectives

The Indian Ocean Region has had ancient foundations for intra-regional trade for at least 4,000 years, through a complex network of maritime trade routes, linking earliest civilizations in the Mediterranean, the Gulf littoral, South Asia and China. This has led to the cross-fertilization of cultures, ideas, beliefs, ethnic technologies, politics and economies (Map 1).

Maldives lies on the crossroads linking the sea trade routes between Southeast Asia/China and the east African coastline. History reveals that the

Maldives have had a number of differing ethnic contacts with the Indian Ocean Rim countries, dating as far back as the 5th Century AD (Maniku 1988; Mills 1970; Gray, 1882).

It has been tentatively suggested (Forbes, 1982) that the Maldives (and Seychelles) may have played a key role as mid-ocean staging posts in the Indonesian migrations to eastern Africa and Madagascar, thought to have occurred during the 4th and 5th Centuries AD. Of more certain significance to the whole of Africa has been the trade in Maldivian cowries (*Cypraea moneta*), the tiny shells once used

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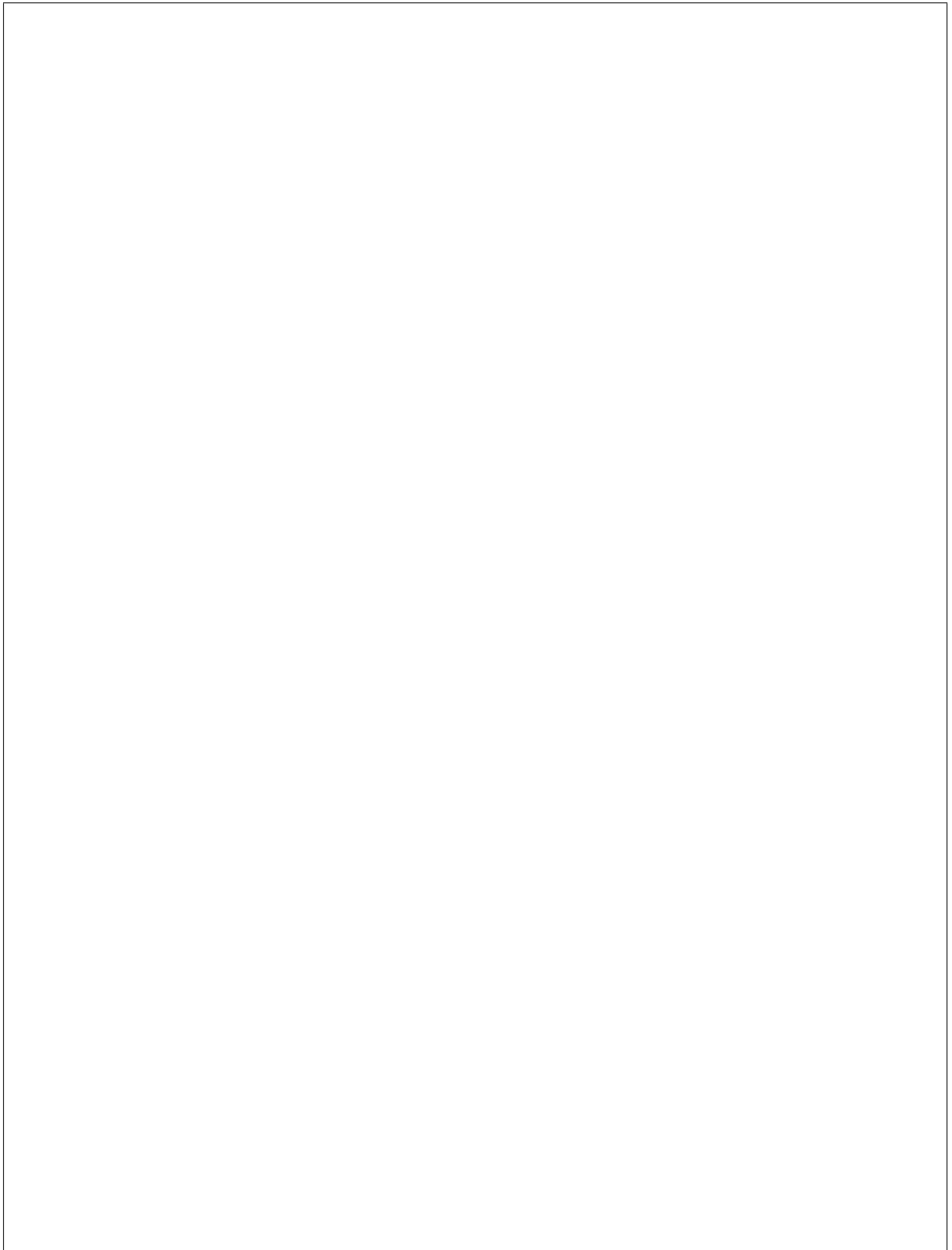


Figure 1: Indian Ocean: Five Island Countries

as a medium of exchange in Bengal, China, Southeast Asia, and throughout large parts of Africa.

As early as the mid-9th Century AD, the Maldives islands were known to the Arab merchant Sulaiyman as a producer of cowries. Although there are no indications of a direct trade in cowries with east Africa, it is known that large quantities of these shells were taken to the ports of southern Arabia as ballast in Arab dhows, crossing the Indian Ocean from Southeast Asia by way of the Maldives. These cowries must have been re-exported to Africa via Sinai, or directly to ports such as Mogadishu, Lamu, Malindi, Mombasa, Zanzibar and Kilwa.

Trade in cowries lasted more than 700 years. The profits attached to the cowrie trade were substantial. Ibn Batuta, who visited Maldives in 1343-4 and again in 1346 (and who was himself also involved in some cowrie trading) records that cowries sold at Malé for between 400,000 and 1,200,000 to the gold dinar. Seven years later, this same traveller saw Maldivian cowries sold at the Kingdom of Mali in West Africa, at 1,150 cowries to a gold dinar.

Interaction with the Indian Ocean Rim countries have been, to a large extent, limited to the monsoon winds as well as the transport of pottery between China and the Persian Gulf communities. Thus,

seafarers, merchants as well as travellers have interacted in various atolls at various periods. Due to the nature of the monsoon and the currents in the Indian Ocean, most of the Arabs travellers had contacts with the northern atolls, while the Southeast Asians visited the southern atolls. This aspect is still visible within the communities of these regions of the Maldives. During these contacts, which could last up to a full monsoon, exchange of goods, ideas and culture developed micro-communities in small lowlying islands within a larger atoll system to the macro-level of a State or an independent nation called the Maldives (Maloney 1980; Bell 1940).

The unique ocean space occupied by the Maldives archipelago provided favourable conditions for maintaining a regularity of trade and transport; thus, Maldives became a major player in this historical trade. The cultural contacts developed fisheries, agriculture and manufacturing, as well as trade. Skills in repairing seagoing craft were highly developed, due to the repairs done on these vessels by the craftsmen of the atolls. This craftsmanship is still noteworthy, compared to that prevailing in other coastal States in the Indian Ocean Region.

These contacts greatly influenced those communities that began to emerge with collective ideas—religious and political—as well as their arts and crafts, transforming them to be adaptive to the local

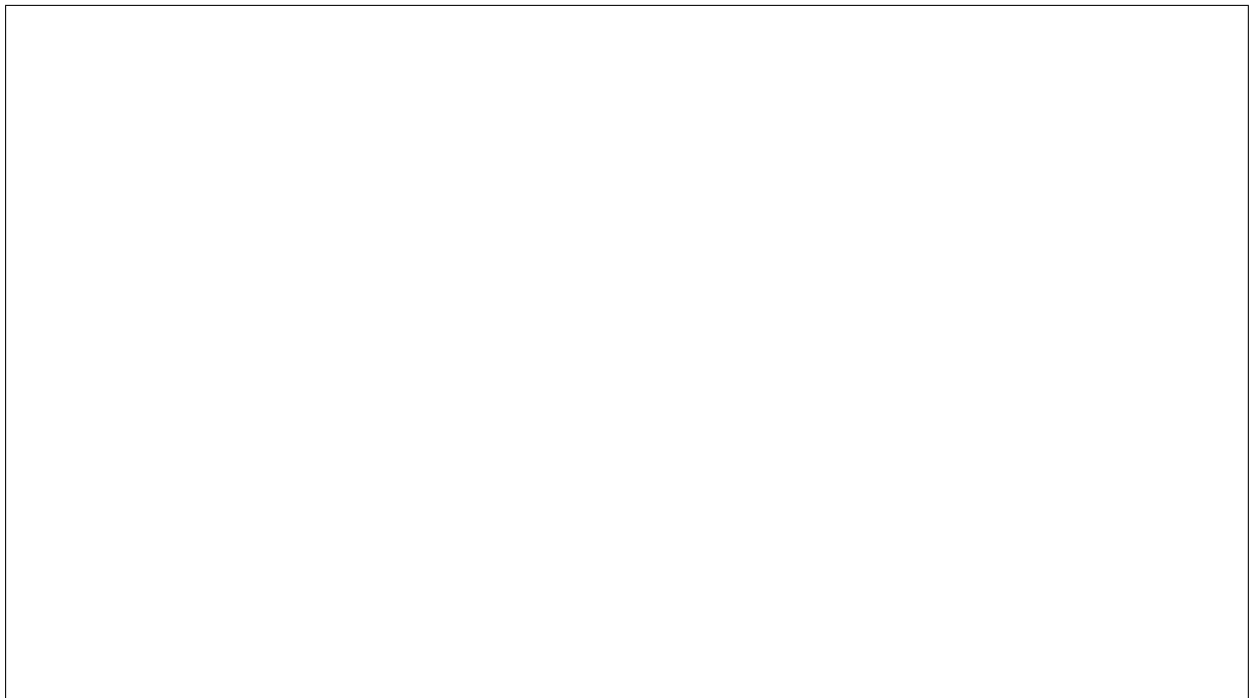


Figure 2: The Eight Circuits of the 13th Century World System (from Abu-Lughod, 1989:34)

environment. Ethnic technologies were developed to cater to the influx of traders. Processing of tuna meat was well documented by Chinese travellers during the 12th Century (Mills, 1970; Bell, 1940).

Due to such early contacts in ancient times with the world's earliest urban civilizations—in the Middle East, the Gulf littoral, along the east African coastline, and in South and Southeast Asia—linked by sea-borne commerce, the Indian Ocean was a thriving network of trade and community links. By the time Maldives embraced Islam during the mid-12th Century AD, it had developed a unique form of governance, highly adapted to the archipelagic conditions of the Maldives. Each atoll had highly developed autonomous governance, whereby the resources were shared within the immediate community as well as the State.

Along with trade, peoples and ideas spread across the Indian Ocean, leading to a cross-fertilization of cultures and technologies. From South Asia, Hinduism and Buddhism spread to Southeast and East Asia. Similarly, from the 7th Century, Islam spread across the Indian Ocean and has been vital to the integration of eastern Africa and Southeast Asia into an Indian Ocean economic and cultural world, which stretched from the South China Sea to the South African coast.

The coming of the Europeans during the 15th–16th Centuries has been a significant period for the old countries to become new nations (Bell, 1931). A largely self-contained, self-sustained, tightly interwoven economic and political and cultural identity began to unravel.

Following the process of colonization, the natural resource base of nations had to accommodate the extra demands placed on them. Arab domination of the cowrie trade between the Maldives and east Africa was taken over by the Portuguese and then by the Dutch.

During the 16th and early 17th Centuries, Maldivian cowries were shipped in bulk to the west coast of India, often on board Maldivian vessels, and then re-exported in European ships to both the east and west coasts of Africa. During the latter half of the 17th Century, the Maldivian cowrie trade was largely routed through Sri Lanka, which had fallen under Dutch control. This trade continued to fuel the slave trade that was expanding on the west coast of Africa. By the middle of the 18th Century, when the West African slave trade was at its peak, the Dutch had taken full control of the cowrie trade from the Maldives. Due to this change of hands and the market, Maldivian cowries made less impact on the east coast of Africa, which started its own

cowrie trade. By the 19th Century, even though Zanzibar and some of the small coastal States had developed a cowrie industry, it was short-lived, mainly because of the small size of the cowrie compared to the cowries of the Maldives. This trade continued until about 1921, when it was replaced by the rupee.

The impact of Europe remained relatively muted until fundamental changes in the North Atlantic began to alter the balance between Europe and the economies of the Indian Ocean Region. European interest in the region was initially focused on the spice, tea and pepper trade. Europe had little to offer the peoples of the region in terms of trading goods and technology until well into the 17th Century. The rise in demand in Europe and European settlements in the Americas for large quantities of goods for mass consumption—mostly textiles and tea—during the 18th Century changed the focus of European commercial activity in the Indian Ocean Region, thus greatly increasing the profitability of the trade.

European commercial interest changed from relatively small quantities of the exotic to large quantities of goods for mass consumption. This increase in European demand coincided with a decline in the power of indigenous empires and States, and with the worldwide spread of European rivalry, primarily between France and Britain. Thus, the Indian Ocean became an arena for European economic and military competition, which led to various European powers carving out territorial empires in the region. By the turn of the 19th Century, the region was beginning to be integrated into the world economy. The age-old economic insularity of the region was destroyed, dislocating the coastal communities from their own larger national identities, due to the demand for raw material inland rather than from the marine and coastal environment. Thus, the regional economies were restructured to service extra-regional economic imperatives.

In this process, regional commercial groups and interests either vanished or were incorporated into European economic and political structures. European superiority in communication technology, finance and military power undermined the political and economic independence of the States of the region, the majority of which were absorbed into the European Commonwealth. Rights of property were with the colonial empires.

The establishment of these empires did not inhibit the movement of peoples across the ocean. New dimensions were added by the movement of

trade, merchants, bureaucrats, military personnel, settlers, slaves and large settlements of Chinese in Southeast Asia and, to a large extent, in the Indian Ocean Rim countries.

Following World War II, European colonial empires collapsed but Cold War rivalry and nuclear superiority replaced their military presence in the region. In economic terms, the colonial experience resulted in the Indian Ocean Region being integrated into the world economy as a peripheral supplier of raw materials destined for the industrialized North. The economic self-sufficiency that existed with a rich resources management strategy was reduced to an economic and technological dependency. Resources, which were sustainable livelihood assets of the coastal communities, became commodities in the international market.

By the middle of the last century, three developments became particularly significant, both for the Maldives as an island nation and for coastal fishing communities at large, namely:

- loosening of the colonial powers, which led to the formation of a formal structure among nations and the birth of the United Nations. While trying to regain their national identities, most countries have institutionalized management and economic development to the core government machinery.
- The social and cultural heritage of the Maldives, being not only historic and rich in itself, had a considerable development asset too in its rich coral reefs and large marine resources. Maldives has never been an “isolated traditional society facing the modern world” but rather it has a successful history of adapting to changing international conditions, while upholding its national integrity against external influences. With the collapse of the cowrie trade, which survived over 750 years, Maldives adapted its dried-fish tuna for the Sri Lankan market. With the development of the international tuna market, the shift of fish markets from neighboring Sri Lanka towards Japan and other Western nations, and the development of a highly successful marine tourism, all point to this flexibility (Fitzgerald, 1984).
- The process of geographic groupings has resulted in the evolution of region-based organizations, which has dismantled a number of historical trade links. This has created a number of trade barriers and customs regula-

tions, hindering that resource from becoming a commodity.

These aspects have had long-lasting effects in restructuring towards globalization. With the strengthening of the regional and international organizations, community development and management of natural resources that have existed at the national levels have been globalized (SIDS Conference, 1994). Prescriptions for efficient management of the resources have been developed without proper review of the traditional systems that have evolved in various communities, thus promoting the concept of uneven development, which is rooted in the central process of capitalist development. It does incorporate, but goes beyond, the problems of depletion to include the valuation and devaluation of resource-based complexes, resulting from technological and other sociological changes.

2 Development Concepts and Regional Economies

The development of regional economies and the emergence of economic powers in Southeast Asia as well as in Europe, the Middle East and the Americas seem to sustain world trade. Small islands and coastal communities had to undergo significant socioeconomic and cultural changes. Natural resources depletion became a reality, and fundamental as well as ideological changes are being demanded. The main result is institutionalizing into larger regional and international, ecological and economic processes (Pomeroy, 1994). Modern communities are being structured by global conventions, thus significantly altering the relationships both within communities and among nations. This has now become the mainstream of this dynamic transition.

Thus, geographic regionalization cannot be considered a unified concept, as it cannot, by itself, be the organizing principle for a new global economic order. Regionalism does not answer how trade should be conducted among regions (Saeed, 1995). In the process of evolving regional co-operation, over the years, numerous institutions and groups have been created in the Indian Ocean Region. By the turn of this century, an overwhelming number of regional groupings and bodies were established. It is hard for a small island nation to co-ordinate efforts, apart from managing the nation internally. If the nation were to reap the benefits of international financing, these small communities, which make up the nation, have to be vigilant.

Despite the global effort of reducing poverty and social deprivation, the economic indices have not changed in any phenomenal manner, whether in the case of marine resources or otherwise. Internal and political tensions have deepened within the same decade. Economically, the coastal community of the Indian Ocean Region inhabited by more than a billion people is one of the poorest in the world.

The region encompasses economies as large as that of India, and as small as those of the Seychelles and the Maldives. The growth of these economies does not reflect a true picture that will justify that all the sustainable livelihood assets are being catered for (Ashley 2000). Such variations and imbalances in the sizes of the economies have hindered regional co-operation. Perhaps more striking is the uneven performance of various sectors of individual economies. Even where growth has been achieved, such uneven performances have raised concern over the allocation of resources across sectors within a nation as well. This aspect is well illustrated in the sharing of marine resources both extractively and non-extractively between the fishery and tourism industries, respectively.

Against this background, in sculpting a vision for the 21st Century for the coastal communities of the Indian Ocean Region, the sustainable utilization of resources has will forge the way for unifying a larger and more concerted effort within the nations of the region to achieve the sustainable livelihood assets. For the Indian Ocean countries, historically, marine resources can be clearly defined as the coastal resources, making up the bulk of the resources, and the tuna resources, which have emerged as an international commodity in recent years.

For Maldives, however, tuna has remained a coastal resource satisfying the domestic demand of protein supply, while the surplus is processed for exports. This historical trade flourished well into the 1970s, until the Japanese and American seiners started to lose grip of the tuna trade with the establishment of UNCLOS, the establishment of the EEZs and the collapse of the Pacific and the Atlantic tuna fishery.

During the early 1970s, the major tuna production in the Indian Ocean was from the Maldives, with over 70 per cent of the skipjack caught in Area 51 (*FAO data collection*) coming from the Maldives. With the introduction of the distant-water fleet into the Indian Ocean, the dominance of tuna production changed. By 1990, the Maldives' share of production was reduced to 29 per cent and by the end of the century, to a mere 11 per cent of the total pro-

duction. At present, the Indian Ocean tuna catches amount to 900,000 tonnes, while the Maldives' production has been increasing at a slow pace, from 30,000 tonnes in the mid-1970s to about 100,000 tonnes at present. At present, the western Indian Ocean Area 51 contributes to most of the total tuna catches, and has thus become a major international tuna fishing ground.

Major catches are being taken by the distant-water Fleet, 47 per cent by purse-seines and 24 per cent by longlines, with the major species targeted being juvenile yellowfin (34 per cent), skipjack (24 per cent) and bigeye (11 per cent). Twenty-five per cent of the world tuna production comes from the Indian Ocean, of which artisanal fisheries catch almost 50 per cent (Zamorov 1998). Thus, tuna stocks in the Indian Ocean have been fully integrated into the world commodity trade. The recent importance laid to the tuna stocks by the distant-water fleets that have gained rights under the UNCLOS has led to the formation of the Indian Ocean Tuna Commission in 1996, with the aim of fully utilizing the Indian Ocean tuna stocks.

The focus on exploiting upper trophic-level species such as tuna has a strong impact on the composition of the pelagic ecosystem in the Indian Ocean. There is a suggestion that the skipjack population is gradually replacing yellowfin and bigeye tuna, especially when large-scale fishery is targeting juvenile yellowfin and bigeye stocks. Thus, species replacement issues may occur, as they do in demersal fish populations. This issue will remain a major concern if the tuna fisheries of the Indian Ocean are to be sustainable (Zamorov 1998). Historical perspectives on tuna fisheries in the other oceans have illustrated this phenomenon. There is a strong feeling that using selective gear is more desirable than industrial purse-seine fisheries in the Indian Ocean, especially in those countries with large coastal communities who depend on this stock for their livelihood.

Until the 1970s, Japan had a complete monopoly in the South Pacific; however, with the collapse of the tuna industry in the Atlantic and the west coast of the United States (US), the US fleets as well as the Korean and Taiwanese fleets began competing in the EEZs of the Pacific Island countries. By the mid-1980s, increased access fees exacerbated the already severe economic problems experienced by the Japanese fleet. More boats were forced out of the fleet and into the Indian Ocean. During the 1980s, the countries' initial strategy for generating economic benefits from their tenure rights was to

charge a resource rent in the form of a license fee, for access to the waters, by the distant-water fleets.

When UNCLOS III was being negotiated, many assumed that it would drastically redistribute income from the world's fisheries (Pontecorvo, 1988). This however, was not the case; analysis showed that even though these countries gained legal jurisdiction over some of the largest tuna stocks in the world, they encountered tremendous obstacles when they attempted to convert those tenure rights into concrete economic gains. Forum Fisheries Agency could be considered a success in organizing and mobilizing co-operation among the Pacific Island Countries (PICs); however, they were unable to compel the distant-water fishing nations (DFWN) to pay them more than a nominal fee.

During the 1980s, the initial strategy of generating economic benefits from tenure rights by charging a resource rent in the form of a license fee for access to the waters was sufficient for those States for which tuna stocks were not their immediate concern; but this strategy did not prove economically viable in a longer-term perspective. When these PICs tried to develop their own tuna industries, they were disadvantaged by being located at the raw material end of the commodity chain (Schurman 1998).

In the Indian Ocean, a similar situation was encountered in the early 1980s when the French and the Spanish fleets moved in. Maldives is one country that has tried to develop its own tuna industry. To date, the country has invested over US\$150 mn in its domestic tuna industry, mainly through its domestic, State-owned enterprises. To date, the operations have been running at a loss. Maldives has been cautious about operating joint ventures, due to their failures in other regions. This has been the case in the other countries in the Indian Ocean Region as well. Most of the investments have been a losing proposition, and have cost the governments scarce public funds, while yielding little in terms of financial payoffs.

What could be the reasons? Most significant was the fact that the tuna industry had moved into a phase of high competition and low profitability by the time the developing countries decided to enter the world tuna market.

Canneries have lost their profitability without a complete tie-up with raw material trading, which has become the only significant component in the tuna business. Virtually all firms involved in raw material trading have become multinational corporations and trading companies with long histories in the industry. Tuna has become one of the

commodities that they were able to cross-subsidize through the sale of other products, when tuna prices sank too low to render profits. What the coastal States have is tuna, so they concentrated on its harvesting and transshipment. By investing in boats and gear, the coastal States were dumping their funds into the most competitive, risky and low-profit part of the commodity chain.

The other problem was the lack of skills required to start up and operate large-scale, commercial fishing ventures. Coastal States had to depend on outside consultants, advisers and potential business partners to help them determine the kind of investments they should make. It has been a challenge to most of these States even to evaluate the advice, due to the lack of agreement among the experts in the fields of fishing technology, fisheries management and socioeconomics.

Another obstacle was the problem of securing legal access to the neighbouring EEZs, while the target species are highly migratory. Thus, unlike the DWFNs, the coastal States could not resort to illegal fishing in each other's EEZ's because it would mean breaching the contract of solidarity among the group. There was also the bureaucratic obstacle.

UNCLOS became a burden to most of the coastal states of the Indian Ocean. They were placed in a precarious position of managing a vast expanse of the ocean called the EEZ, while the majority of these communities were concentrating on the coastal resources for their livelihoods. The limited capacity of an international treaty on property rights to alter the distribution of income from the world's fisheries was needed. Even though the coastal communities gained legal access to the fishery resources, they encountered the constraint of enormous political and economic power inequalities when they attempted to convert those tenure rights into concrete economic gains.

Schurman (1998) suggests that much of the optimism about international treaties leading to increased international equity is unwarranted. The variables that critically mediate the relationship between property rights and income distribution are economic and political.

External aid has been another driving force, which has been driven by colonial and postcolonial legacies. These external financing mechanisms had a major influence on the way States pursued investment in the industry.

The Pacific lessons reveal the limits of moving successfully into a global industry from the raw material end of the commodity chain. Since the

coastal States owned the rights to the resource on which this industry is based, they were inclined to invest in resource extraction. However, the resource extraction is the least profitable and the highest-risk segment of the global tuna business.

With regard to the coastal resources utilization, the picture is much bleaker. The resources, which were once the livelihood assets of the immediate population, became an important commodity as well. Due to the economic benefits that have been attached to the stocks, coastal communities were under pressure by growing population as well as growing international demand. This led to the development of a number of fisheries development and management concepts without the proper identification of the resource rights of the communities.

The WHAT Commission (2000) is convinced that clearly defined and enforceable rights are the foundations on which effective fisheries governance needs to be built upon. The difficult issues that arise in the transition process to rights-based management, the importance of sound and transparent scientific advice and the application of these management strategies within national jurisdictions and the high seas have been elaborated and have become the main focus of a number of seminars and conferences. They finally suggest a World Fisheries Summit to elaborate the problems identified, particularly those affecting the coastal communities, whose livelihoods depend on these resources, and to find solutions to these problems.

Fisheries cannot be considered in isolation anymore, because fisheries need to take into consideration both the well-being of human communities as well as the ecosystem. This implies conservation of ecosystem structures, processes and interactions through sustainable use. This aspect is now widely accepted by the fisheries management institutions worldwide, but there is a growing uncertainty as to how to implement an effective ecosystem management system in reality.

The United Nations Convention on Environment and Development (UNCED or the Rio Earth Summit) and the development of the Convention on Biological Diversity (CBD) can be considered the most important milestones that will shape humanity's economic and social development. For the first time, the earth's biological resources have been recognized as a global asset of tremendous value to the present and future generations. The CBD was inspired by the world community's growing commitment to sustainable development. It represents a dramatic step towards the conservation of biolog-

ical diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources.

3 Discussions

Of all the concepts that have emerged in the past 20 years in management of resources, none is more compelling than that of sustainability. The definite reason for this is the growing recognition that humanity is currently on an unsustainable path of development. The need to preserve these resources was first put on the international policy agenda by the Brundtland Commission, which also formulated the classic definition of sustainable development, more than 10 years ago. The same goal has guided other international policy exercises, notably the Earth Summit in 1992 and the recent negotiations on climate in Kyoto.

While these concepts are still in the formative stages among the intellectual elite, coastal communities, like the majority of the masses in the Third World, have to depend on the values and socioeconomic arrangements of the industrial era, and they continue to evolve without major discontinuities. Competitive markets and private investments still remain the engines of economic growth and wealth allocation. The globalization of product and labour markets continues to rule, catalyzed by free-trade agreements, unregulated flows of capital and advances in information technology. The nation-State remains the dominant unit of governance, while transnational corporations dominate an increasingly borderless economy.

Consumerism and possessive individualism endure as the primary motives underlying human behaviour; consumer culture permeates all societies via electronic media, reducing diversity, despite fundamentalist, ethnic and nationalistic backlashes. The consumption patterns and production practices of the developing regions converge toward those of the highly industrialized countries.

Due to the growing socioeconomic inequality, increased morbidity and reduced access to resources, social tensions become widespread and intense. International dissatisfaction aggravates due to widening disparities between regions as well as growing economic competition and the progressive decline in development assistance. People in rich countries increasingly fear that their well-being is threatened by factors they associate with poor countries, including migration, terrorism, disease and global environmental degradation. As

such, tensions increase, and the incidence of violent confrontation rises, sparked by longstanding ethnic and religious differences, politically motivated terrorism, struggles over scarce resources, competing nationalism and commercial conflicts.

If this process is to continue, several destabilizing risks can be identified. Firstly, the cumulative loads on Earth's biogeochemical cycles and ecosystems could exceed natural assimilative capacities. This is shown by the sharp increase in carbon dioxide emissions, habitat destruction, biodiversity loss and the accumulation of toxic chemicals in the environment.

Secondly, heightened pressure on the natural resources leads to economic and social disruptions and conflicts. Already diminishing resources leading to the collapse of the fisheries are depriving millions of people of their primary resources.

Finally, social and geopolitical stresses threaten socioeconomic sustainability. The persistence of poverty on a large scale and the continuing inequality between and within nations undermine social cohesion and stimulating migration, thus putting stress on international security systems. A breakdown in sociopolitical stability could, in turn, provide the necessary conditions for authoritarianism, flaring regional, ethnic and religious conflicts, leading to a suppression of democratic institutions.

Thus, it is necessary to identify a major policy reform, which would assume strong measures at all levels of government within the context of current values and institutional structures. Such a policy reform should try to achieve rapid economic growth, greater distributional equity, and management of resources and serious protection of environmental quality.

Governments, businesses and the general public are becoming increasingly aware of this worsening social polarization and conflict.

A new international polity needs to emerge around these concerns, as there is widespread feeling that life has lost much of its meaning. The conviction is that reliance on the profit motive to guide the economy has been environmentally and socially costly and those governments have become too weak. These processes are slowly crystallizing into a worldwide ferment of untold millions searching for new ideals, meaning and forms of existence. Young people around the world are discovering a new collective identity in a new idealism, which is directed toward creating a global community. The Internet has become the tool for this new consciousness, helping to forge a sense of unity.

In sculpting a vision for the 21st Century, it will, therefore, be essential to work from the bottom up as well as from the top down, that is, to consider the local, national and regional implications along with global implications. The global perspective, of course, is indispensable. It enables us to identify the forces that increasingly shape and constrain development everywhere. For example, an adequate strategy for sustainable development within the confines of a shared stock requires a detailed analysis geared to the specific circumstances, and an appreciation of the ways in which larger forces can influence local environmental, demographic and economic conditions.

4 Conclusion

Against this background, some of the broad challenges the coastal communities have to face during the 21st Century relate to:

- the vast disparity that exists in technology between the North and the South;
- the vast number of international and regional organizations dealing with similar issues, leading to duplication of scarce resources;
- lack of co-ordination and co-operation among sectoral agencies, which also leads to duplication and misuse of scarce resources;
- the vastness of the waters within the jurisdiction of most of the coastal States, which drains scarce human and financial resources for management, monitoring, control and surveillance;
- lack of an integrated, multidisciplinary approach in marine science, fisheries, marine tourism and marine surveillance;
- lack of co-ordination among government agencies in delivering effective extension programmes;
- lack of understanding of the traditional rights of the coastal resources in relation to coastal communities by the fisheries and resources management agencies; and
- lack of a unified language for communication among the coastal communities of the Indian Ocean Rim countries.

If sustainable development is to contribute in a major way to development theory and practice, there will have to be much more effort devoted to

research on these themes. It is important to identify and explore key research themes, which stand out, especially in relation to economic development processes. Biological diversity and global warming are novel elements for most national institutions catering to the coastal communities of the region. They herald a new style of international contact, which will characterize the 21st Century.

Defining new development and management priorities under the new world order is starting to slip from the tight grasp of bureaucrats and politicians, into a broad, well-informed coalition of interest groups, which is demanding a new generation of development thinking focused on sustainability and responsibility, respecting cultural diversity and ideologies. Most countries face exceedingly difficult times, because they have to contend with structural adjustment programmes, population growth, economic stagnation and the still hazy issues related to international property rights in the biodiversity domain, and the sharing of transboundary resources.

Hence, the power to change is still dominated by the inability of the international community to effectively act upon the many disparities and transgressions of human and environmental rights. Sustainable development thinking, therefore, cannot ignore the pragmatic problems of implementation and the realities of the divided world. Socioeconomic and cultural diversity cannot be ruled out.

The 21st Century will have to initiate major structural adjustments and sustainable development initiatives, as the two likely themes that would dominate the discussions for coastal communities to reap the full benefits from their immediate marine resources.

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Ecosystem Considerations for Managing Marine Fisheries in the Indian Ocean

*E. Vivekanandan **

Abstract

The fisheries management approach of several countries, including those in the Indian Ocean Region, has been generally on a species-to-species basis. It has been realized now that this approach has severe limitations, especially for tropical, multispecies fisheries. While the understanding that fish and other living aquatic resources are integral parts of their ecosystems is not new, this idea has not been put into practice in managing stocks, especially for marine fish. Reshaping the management strategies by involving all the stakeholders in such an ecosystem approach is expected to yield short-term and long-term benefits.

Keywords

Fisheries management. Ecosystem approach. Tropical multispecies fisheries. Fish stock assessment. Trophic interactions. Marine food webs.

1 Fisheries in the Ecosystem Context¹

Fish stock assessment models provide scope for determining maximum sustainable yields so that management options can be advocated for removing surplus production. Surplus production is the total weight of fish that can be removed by fishing without changing the size of the population. Several surplus production models have been advanced in the last century for temperate fish stocks (Schaefer, 1954; Thompson and Bell, 1934), and, with a few modifications, for tropical fish stocks (Pauly, 1979; Sparre and Venema, 1992) to determine the species biomass and maximum yields, and to evolve fisheries management options. However, when fishing is examined in an ecosystem context, the rationale for harvesting surplus production is ambiguous (National Marine Fisheries Service, 1998). Marine ecosystems are compact and are effective in capturing energy, cycling nutrients and producing biomass. Several researchers (for example, Hilborn and Walters, 1992) doubt whether any of the biomass is truly surplus to an ecosystem.

Fishing induces ecological and biological changes on prey-predator interactions, growth, mortality and reproduction among the fish stocks. In short, fishing alters the structure and function of marine ecosystems (Dayton, 1998). In turn, fish stocks cannot be understood and quantified fully without a thorough knowledge of their associates in the sea, especially of their prey and predators, their habitats, and also of the dynamics of physical and chemical oceanography. The understanding that the fish and other living aquatic living resources are integral part of their ecosystems is not new. However, this idea has not been put into practice, especially for the marine fish stocks.

The management approach of several countries, including those in the Indian Ocean Region, to a very large extent, has concentrated on a species-to-species basis. It has been realized now that the traditional management approach has severe limitations, especially for the tropical, multispecies fisheries. Most of the developing countries in the western Indian Ocean and eastern Indian Ocean experience constraints in effectively managing their marine fisheries (Devaraj and Vivekanandan, 1997);

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¹The views presented here by the author are purely personal and they need not necessarily reflect the views of the organization he represents.

concentration on species-by-species management approach in the multispecies environment and weak implementation instruments have severely restricted effective management of the resources (Vivekanandan, 2001). Nevertheless, fisheries have continued because they provide food, livelihood and economic benefits to the communities and contribute to the balance of payment to several countries bordering the Indian Ocean.

Unlike the situation that existed two decades ago, the present-day computer technologies make it possible to quantify the functions of the ecosystem and adopt a better approach for the management of exploitation on an ecosystem-by-ecosystem basis. What is required now is a holistic view of fishery exploitation and management as a real and integral part of the marine ecosystem (Langton and Haedrich, 1997).

2 Uniqueness of the Environment of the Indian Ocean

The relationship between the environment of the Indian Ocean and fisheries in the region is determined primarily by the uniqueness of the northern Indian Ocean. The northern Indian Ocean, together with its two major bays, the Arabian Sea and the Bay of Bengal, is landlocked in the north due to the existence of the Asian continent. This morphological uniqueness of the Indian Ocean is primarily responsible for the differences in the geological, physical, chemical and climatic conditions of the ecosystems, compared to those of the other oceans in similar latitudes, as outlined below:

1. The Asian continent separates the northern Indian Ocean from the deep reaching vertical convection areas of the Arctic Seas and the cold climate regions of the northern hemisphere.
2. The continent is large enough to affect the ocean climatologically by causing the seasonally changing monsoons, the southwest and northeast monsoons.
3. The seasonally changing monsoons, in turn, reverse the oceanic circulation over the northern parts.
4. Connected with this seasonally changing circulation are various upwelling areas, which operate only during one season, the southwest monsoon season, which is in contrast

to all the other major upwelling areas in the world (Wyrski, 1973).

5. The northern Indian Ocean areas are the largest regions with the lowest oxygen concentration in the entire open oceans of the world.
6. Another outgrowth is the formation of high salinity waters in the Arabian Sea from the even more highly saline Red Sea and Persian Gulf.

These factors influence large differences in the behaviour and functions of the ecosystems of the Indian Ocean from those of the other oceans; and between the ecosystems within the Indian Ocean. A succession of dynamic links in the food chain between the phytoplankton, zooplankton, plankton feeders and carnivores takes place. It is important to estimate the efficiency of transfer of energy from primary production to tertiary production and understand at which trophic level one is harvesting the various ecosystems of the Indian Ocean.

3 Trophic Interactions: A Key Consideration for Ecosystem Management

When stress is applied to an ecosystem, it is initially difficult to notice the changes in its structure and behaviour. However, beyond a critical threshold, the system begins to deteriorate rapidly and the impact becomes conspicuous (Holling and Meffe, 1996). Fishing is perhaps the earliest stress applied to the marine ecosystem. The oldest fishing implements so far identified are harpoons, found in the territory of the Congo (ex-Zaire), and dates back 90,000 years (Stringer and McKie, 1996).

For centuries of early stages of development, fisheries tended to use highly selective gear, and their effect on ecosystems probably resembled the effect of natural predation (Stergiou, 1999). The fishing pressure exerted by modern industrial fleets differs radically from natural predation and has detrimental effects on the trophic web (the network that represents the predator-prey interactions of an ecosystem). The effects are detrimental mainly for long-lived, late-maturing species (Parrish, 1998), leading to the phenomenon now known as "fishing down marine food webs".

Pauly et al. (1998) and Pauly (1999) have shown that landings from global fisheries have shifted from large piscivorous fish toward small invertebrates and planktivorous fish in the last five

decades, especially in the northern hemisphere. They demonstrated that the networks of flows of matter (=biomass) are affected directly by fishing, which removes predatory fish, or competes with them for their prey, in either case affecting the marine food webs. The results on the analysis of global data are striking: there is a gradual decline in the mean trophic level of fish landings of about 0.1 per decade (from 3.3 in 1950 to 3.1 in 1994).

Fishing down food webs also occurs in the Antarctica and the freshwater systems around the world, where the catch has strongly reduced nearly to herbivore level. In the tropical belt also, a similar trend was observed in the Gulf of Thailand (Christensen, 1998). Initially, fishing down the food web yields higher catches, but below a certain trophic level, which may vary between ecosystems, further decline in the trophic levels leads to decreasing catches. This trend is generally perceived as indicating a serious problem and the present trend could lead to widespread fisheries collapses.

There are extensive studies on the stomach content of fish in the Indian Ocean Region, where hundreds of fish of many species have been sampled over several decades. Some multispecies predator-prey models have been developed, but, generally, these models are better at explaining the effects that trophic relationships might have had, rather than predicting future patterns and variations. One such evidence on the effect of trawling on the trophodynamics has been obtained for the Bombay duck (*Harpodon nehereus*) along the northwest coast of India. In the 1950s, prior to the introduction of trawlers, the major diet of the Bombay duck comprised the penaeid and nonpenaeid prawns, and cannibalism was insignificant (Bapat et al., 1952). With the intensification of trawling, the abundance of prawns reduced and the Bombay duck has resorted to cannibalism. In the 1980s and 1990s, the smaller Bombay duck contributed 30 per cent to the diet of the larger ones (Devaraj and Vivekanandan, M.S.).

4 Components of an Ecosystem-based Approach to Fisheries Management

According to the National Marine Fisheries Service (1998) of the US, an ecosystem-based approach should take into account the following four aspects: (i) the interaction of a targeted fish stock with its predators, competitors and prey species; (ii) the effects of weather and hydrography on fish biology and ecosystem; (iii) the interaction between fish

and their habitats; and (iv) the effects of fishing on fish stocks and their habitats, especially how the harvesting of one species might have an impact upon the other species in the ecosystem. The National Research Council of the US (National Research Council, 1999) advocated one more aspect to this approach, that is, recognizing humans as components of the ecosystems they inhabit and use, thereby incorporating the users of the ecosystem in the approach.

The marine fish landings in the Indian Ocean Region increased from about 1 mn tonnes in 1948 to nearly 8 mn tonnes in 1996 (Fig. 1). However, the eightfold increase masks a series of problems, which the fisheries in the Indian Ocean Region are facing today. Fisheries in the Indian Ocean are perhaps the most poorly managed, compared with those of the other oceans. The reasons are biological, social and economic complexities.

In the tropical belt of the Indian Ocean, the fisheries exploit hundreds of species, and the landings in major landing centres regularly include about 200 species belonging to about 50 groups every day—though a few, sometimes only two or three, may contribute to 50 per cent of the catch (for example, the oil sardine along the southwest coast of India, and the round scad in the Gulf of Thailand). Each of these 50 groups is unique in the marine ecosystem and also in the fisheries.

Viviparity, low fecundity, slow growth, long life span of shark; schooling, high fecundity, fast growth, short life span of clupeids; transoceanic migration of tuna; sex transformation by groupers; amphibiotic estuarine and marine habitation, high fecundity, fast growth, short life span of penaeid prawns; and semelparity in a few cephalopods are examples of a few diverse life pattern strategies adopted by the economically important fish groups.

Fisheries in the tropical oceans exploit these groups regardless of their uniqueness. It is common that several of these diverse groups are landed in a single trawl haul.

A single trawl haul in the tropical belt of the Indian Ocean lands, on average, 40 to 60 species; some of them are in a state of overexploitation, others in an underexploited state and the rest are optimally exploited.

Now the question is how to manage these diverse fish stocks, which are in different states of exploitation? Should the management option concentrate on the dominant species, and hope that the ecosystem will somehow adjust to management measures aiming to generate high catches of that

species? Or should the option try to consider 'ecological redundancies', that is, group the fishes into guilds of similar species or similar states of exploitation and try to manage the guilds as if they were single species?

These uncertainties are an enigma for evolving effective management priorities for the multispecies fisheries. It is believed that ecosystem-based fisheries management will not be ambiguous in providing answers for these questions.

5 Plan for Ecosystem-based Fisheries Management

As fisheries management expands its focus from target fish stocks to the ecosystem, the main implication of the ecosystem-based fisheries management is the need to cater to the well-being of the ecosystem as well as the communities. While it is a major conceptual advancement, the practical problems raised by this recognition are immense. There is still uncertainty on how to implement an effective ecosystem-based management system in practice. Nevertheless, there are pragmatic ways to begin implementation of ecosystem-based fisheries management and to deal with complex interactions of human institutions and societies.

Amongst the immediate steps that should be taken by the countries bordering the Indian Ocean in moving towards ecosystem-based fisheries management are the following:

(i) Ecosystem classification and zonation The ecosystems supporting fisheries in the Indian Ocean Region vary markedly, and the status of exploitation in each ecosystem and the way in which fisheries are managed within them will also vary according to their individual characteristics. Hence, the management options such as optimizing craft and gear combinations should be different for these two diverse zones. The structure, function and processes that occur between, as well as within, ecosystems should be considered for delineating the ecosystems. The delineation should consider human/institutional components and their interactions too.

Zonation of the coastal areas into smaller and manageable levels may be useful for effective implementation. An indicative outlay of the zonation along the 8,129 km coastline of India could be as follows: (a) Gulf of Kutch ecosystem; (b) Saurashtra coast; (c) south Gujarat coast; (d) north Maharashtra coast; (e) south Maharashtra coast; (f) Konkan coast; (g) north Kanara coast; (h) south Kanara coast; (i) Calicut-Cochin coast; (j) Cochin-

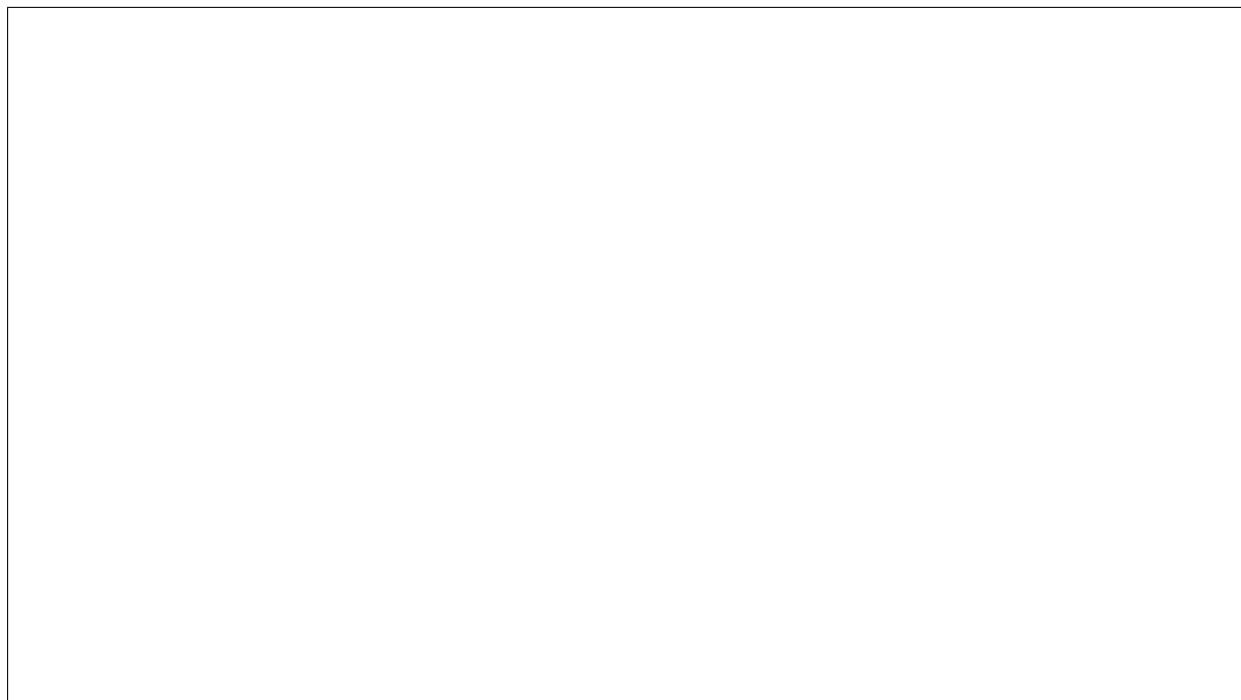


Figure 1: Rationale for the application of an ecosystem approach for managing fisheries in the Indian Ocean

Kanyakumari coast; (k) Wadge Bank; (l) Gulf of Mannar; (m) Palk Bay; (n) Coromandel coast; (o) Pulicat Lake; (p) north Andhra-south Orissa coast; (q) Chilka Lake; (r) Bhitarkanika; (s) north Orissa-West Bengal coast; (t) Sundarbans; (u) Andaman & Nicobar Islands; and (v) Lakshadweep Islands.

(ii) Develop ecosystem modelling Modelling is an essential scientific tool in developing ecosystem approaches for fisheries management. Food-web-based models could examine factors that affect primary productivity and their interaction with all components of the ecosystem. As a measure of the state of exploitation of the world's aquatic ecosystem, Pauly and Christensen (1995) estimated how much primary production was required to sustain the global fisheries in 1988-1991. The results showed that, globally, some 8 per cent of aquatic primary production was appropriated by the fisheries, and that there was considerable variation between resource system types: for open-ocean fisheries, only 2 per cent was required, while upwelling, shelves and freshwater systems required an order of 25 to 35 per cent primary production. For sustaining the coastal fisheries, it is suggested that only one-third of the total primary production could be used since a good part of it (over half) can be expected to fall out to the sediment (Christensen, 1999). It may be concluded that the 'available' primary production of the oceans, especially in the coastal waters, is fully utilized by humans.

Models such as ECOPATH (Polovina, 1984; Pauly and Christensen, 1995) have provided insights into some fundamental ecosystem questions. ECOPATH, with the recently incorporated ECOSIM software system, is designed to describe the trophic fluxes and variables in ecosystems. By using this software, more than 100 ecosystem models have been published, and another 50 are in progress. Considering the need to gain an insight into the functioning of the trophic food web for the Indian fish stocks, Vivekanandan et al (2001) gathered the available information and constructed a biomass budget for the southwest coast of India for the years 1994-1996, using ECOPATH. For this purpose, the ecosystem along the southwest coast was categorized into 11 ecogroups, based on the feeding habits and ecological niches of the species/groups: large predators, medium predators, large zoobenthic feeders, demersal feeders, mesopelagic feeders, molluscan feeders, zooplankton feeders, phytoplankton feeders, zooplankton, phytoplankton, detritivores and detritus.

The analysis resulted in the following conclusions:

1. The annual average catch of the large and medium predators, demersal feeders and detritivores exceeded the respective estimated harvestable biomass, and hence, the exploitation of these groups should be restricted.
2. There is scope for increasing the catches of large zoobenthic feeders and the plankton feeders.
3. Gear employed for the exploitation of demersal resources are being used excessively.
4. Gear employed for the exploitation of pelagic resources, such as the pelagic and midwater trawls, are underutilized or unutilized.
5. Though the ecosystem analysis demands large number of input parameters, the analysis is useful for understanding the ecosystem and for evolving suitable management options.

(iii) Setting objectives and options for each ecosystem In consultation with all legitimate stakeholders and interest groups, objectives must be agreed upon for each ecosystem. Objectives should include both long-term and short-term goals to increase the biodiversity as well as the biomass, and should cover biological, ecological, economic, social and institutional issues. Some of the considerations for ecosystem-based fisheries management are given in Table 1.

For instance,

1. The short-term objective of a coral reef ecosystem should be the protection of the reef and its dependent fauna and flora, and the long-term objective should be to rebuild and extend the reef area.
2. The objective of the mangrove ecosystem is to protect the plants and nurseries, and, if required, to launch afforestation programmes. Some of these ecosystems in the Indian Ocean Region have already been declared as marine protected areas (MPAs), but the present system does not look so promising. Less than 0.3 per cent of the area in the Indian Ocean Region lies within MPAs, but a much smaller fraction of that is currently protected from fishing.

Type of Ecosystem	Components	Management Options	Type of Fishing Regulation
I. Critical Ecosystem	Coral Reefs; Sponges; Mangroves	Marine Protected Areas; Coral rebuilding; Mangrove afforestation	Fishing ban altogether
II. Vulnerable ecosystem	Declining fish stocks; Concentration of vulnerable/ endangered species	No-fishing zone; Resource enhancement programmes like sea-ranching	Fishing ban altogether; Alternative livelihoods like mariculture
III. Polluted ecosystem	Bioaccumulation of pollutants	Ecowatch; Evolve standards for waste discharge; Implement polluter-pays principle	Fishing and marketing of fish with pollutant loads to be prevented
IV. Estuaries, lagoons and backwaters	Nurseries; Closure of bar mouth	Seasonal closure of fishing	Ban on all forms of fishing during seasons of spawner and juvenile abundance and closure of bar mouth; Regulate mesh size
V. Open coastal waters	Combination of under- and overexploited stocks	Seasonal closure of mechanised fishing; Area demarcation for mechanized & traditional craft; Limited entry; Part of area as no-fishing zone either on rotation or permanently	Regular but controlled fishing; Precautionary approach; Alternate livelihoods like mariculture.
VI. Far-sea/deep-sea	Mostly under- and unexploited stocks	Atlas on areas of resource abundance; Devise economically viable craft and gear; Regional co-operation	No restriction for the present; Local fishing communities deserve encouragement

Table 1: Considerations for Ecosystem Management

3. The objectives for an urbanized/industrialized ecosystem should be to set standards for effluent discharge, and regularly monitor the pollutant load in the coastal waters and in the body components of the organisms.
4. The objectives for sustaining the ecosystem of open waters should encompass a combination of technical measures, closed areas and seasons, input and/or output controls, and a suitable system of access rights for all users. The system and functioning of the coastal open-water ecosystem differ between one zone and another. For instance, the Kerala coast (southwest coast of India) experiences upwelling during the southwest monsoon (June to September), abundant supply of phytoplankton and zooplankton, and, consequently, the fishery is dominated by the small pelagics such as sardines, whitebaits and Indian mackerel (49.7 per cent of the landings). On the other hand, the Saurashtra coast (northwest coast of India) experiences winter cooling and sinking during November to February, and, consequently, the fishery is dominated by the demersals (57.2 per cent of the landings) such as sciaenids, flatfish, ribbonfish, etc.
5. The concept of a no-fishing zone in the open waters is gaining importance in several regions. The idea behind a no-fishing zone is to ban altogether all forms of fishing in select areas. The idea is simple. If the fish are protected from fishing, they live longer, grow larger and produce an exponentially increasing number of eggs. It is observed that adult fish tend to remain in the protected areas, while their larvae help replenish adjacent fisheries. Overall (multispecies) levels of biomass per unit area can double in two years and quadruple in the years of closure.
6. In the Californian reserves, the reproductive output of two rockfish species was estimated to be two to three times as great as in the fished areas. On the west coast of the US, the reproductive output of the lingcod in a reserve in Puget Sound was 20 times greater than outside, and for the copper rockfish 100 times greater. These no-fishing zones showed average increases of 91 per cent in the number of fish species present (Roberts, 1999). These increases occurred within two years of starting the protection scheme. Crucially, the beneficial effects spilled over into areas where fishing was still permitted. In St. Lucia, for example, a third of the country's fishing grounds were designated no-fishing area in 1995. Within three years, commercially important fish stocks had doubled in the seas adjacent to the reserves.
7. There is strong evidence to suggest that reserves will work even better in the tropics. However, there is no direct experience of reserves in the tropical regions of the Indian Ocean, barring marine sanctuaries to protect coral reefs and mangroves. Considering that the concept of no-fishing zone is a good strategic tool, fisheries managers in the countries bordering the Indian Ocean should start working on the questions of how much of the fishing grounds should be placed in reserves, how many are needed, and where they should be.
8. There seem to be three principles that govern no-fishing zones. According to the first principle, both biological and economic benefits can be maximized through closures ranging between 20 and 40 per cent of the fishing grounds. Recently, the American Association for the Advancement of Science, along with about 100 scientists, called for 20 per cent of the world's oceans to be declared as no-fishing zones by the year 2020 (Roberts, 1999).
9. The second principle is based on the expectation of maximization and equitable distribution of benefits through a subdivision of the 20 per cent reserve area to represent both biogeographic and ecological diversities within the reserves.
10. The third principle stems from the question whether the derivation of maximum benefits is from the permanent reserves or from rotational reserves. Considering the location of fishing villages in close proximity to one another in the countries bordering the Indian Ocean, the selection of areas for no-fishing, and the logistical, economic, political and social implications of dislocating and rehabilitating the fishers to fishing areas away from the reserves call for extreme care in planning. Perhaps alternate livelihood sources in the form of ecofriendly mariculture in the no-fishing zone could be considered.

11. Resource enhancement programmes such as sea-ranching or installation of artificial reefs may be implemented in a few specific ecosystems.
12. The fishing communities are dispersed all along the coastline in the countries bordering the Indian Ocean, and they are dependent on marine ecosystems that are close to them. The nature of the ecosystems is an important determinant of many cultural characteristics, including the social and economic organization and the fishing gear and technologies that are utilized. They develop intimate, detailed and function-oriented knowledge about the marine ecosystems. They are also easily vulnerable to resource depletions. The question is, how are the countries prepared to adopt ecosystem-based fisheries management? The ecological considerations do not expect the halt of traditional, locally based management systems. However, the traditional community-based approach will have to be reinvented, within the specific cultural, social and economic constraints of each country. Foremost among these is the requirement to involve all stakeholders.

6 Conclusion

Reshaping management strategies by involving all the stakeholders in an ecosystem approach is expected to yield short-term and long-term benefits. Some of the decisions like no-fishing zones may demand rehabilitation of the communities to alternate sites or livelihood opportunities. A carefully planned protocol and implementation of ecosystem-based fisheries management within a logistic time frame is expected to contribute to the protection of marine biodiversity and fisheries.

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International Instruments for Managing Fisheries in the Indian Ocean

Rolf Willmann *

Abstract

This paper sets out with a brief review of the status of marine fishery resources and the principal fisheries management issues in the Indian Ocean Region. It then presents important international instruments for fisheries management and, in general terms, reviews progress in their implementation. The term 'international' is defined broadly to also encompass the conventions of regional or sub-regional fisheries management organizations (RFMOs). The paper focuses on fisheries management in the conventional sense of making optimum use of the fishery resources. Instruments addressing the protection of fish habitats from pollution and degradation are also addressed but in less detail.

Keywords

Fisheries management. Fish habitats. Pollution. Overfishing. Habitat degradation. Eco-labelling. Migratory and straddling fish stocks. Regional fisheries management organizations. International instruments for fisheries management. Rio Declaration. Agenda 21. Convention on Biological Diversity. UNCLOS. Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA).

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1 Introduction^{1,2}

The aim of this paper is to present important international instruments for the management of Indian Ocean fisheries. The term ‘international’ is defined broadly to also encompass the conventions of regional or sub-regional fisheries management organizations (RFMOs).

The focus of the paper is on fisheries management in the conventional sense of making optimum use of the fishery resources. The protection of fish habitats from pollution and degradation is also addressed but in less detail. Instruments covering maritime safety, labour and human rights standards and international trade are not considered, except for those provisions that might have direct relevance for fisheries management.

The paper will only occasionally, and as a matter of example, refer to the management of specific fisheries in the Indian Ocean Region for the simple fact that this region is so vast and diverse in climatic and environmental conditions, fishery resources, technological levels and scales, and nutritional, economic, social and cultural importance of fisheries.

It will, however, briefly describe the current status of marine resources in the region and review, in general terms, the principal fisheries management issues and how these affect, in particular, small-scale artisanal fisheries and fishing communities. The bulk of the paper is devoted to summaries or excerpts of international instruments and some commentaries and notes on their history.

¹The views expressed in this paper are those of the author. They do not necessarily represent the views of the Food and Agriculture Organization of the United Nations (FAO), nor any of its Members.

²Nothing in this paper implies the expression of any opinion whatsoever on the part of the FAO concerning the legal status of any country, territory, city, or area or of its authorities, or concerning its frontiers or boundaries.

2 The Status of Marine Fisheries Resources in the Indian Ocean Region

For statistical purposes, FAO has divided the world's oceans into several statistical areas. Statistical Area 51 covers the western Indian Ocean, i.e. the area between the east coast of Africa and the west coast of India. Statistical Area 57 covers the eastern Indian Ocean, i.e. the area between the east coast of India and the west coast of Australia. The following account of the status of marine fisheries resources in these two areas has been extracted from FAO's regular reporting exercise.³

2.1 *Western Indian Ocean*

The western Indian Ocean area has a surface area of 30 mn sq km, and encompasses regions with greatly differing fishery resources characteristics. The Northwest Arabian Sea contains areas of nearly continuous upwelling (off the Oman coast) and thus extremely high productivity, as well as areas with seasonal upwelling also resulting in periods of high productivity, as off the coast of Iran and Pakistan in the Gulf of Oman and Arabian Sea. This monsoon-induced upwelling extends to the west coast of India. The Persian Gulf, a shallow, enclosed area characterized by warm saline waters has fisheries characteristic only to that area, while, in the Red Sea, narrow continental shelves and an enclosed nature also create unique fisheries situations. The Gulf of Aden and Somali coast are also monsoon-driven upwelling areas that experience seasons of high productivity. Area 51 also contains some small oceanic islands, the Seychelles, Mauritius, Maldives and the Comoros, that have their own characteristic fisheries reflecting their oceanic or near-oceanic features. Further to the south, South Africa has fisheries of a temperate and sub-Antarctic nature.

The total marine capture fishery catches in the western Indian Ocean increased at a compounded annual average growth rate of 3.8 per cent from a 1970 catch of about 1.5 mn tonnes to nearly 3.9 mn tonnes in 1999.⁴ The catch in the early 1950s amounted to about 0.5 mn tonnes. India is by far the biggest fishing nation in the western Indian Ocean Region with a west coast catch of 1.78 mn tonnes, equal to 46 per cent of this Statistical Area

in 1999. This is followed by Pakistan, with 474,000 tonnes (12 per cent) and Iran with 244 thousand tonnes (6 per cent). The rest of the catch in the western Indian Ocean Region is made up of a large number of countries, each of about half of them contributing less than one per cent of the total catch and each of the other half, more than one per cent but less than 4 per cent. Countries whose share is above one per cent include Egypt, France, Maldives, Madagascar, Oman, Saudi Arabia, Spain, Taiwan (Province of China), Tanzania, United Arab Emirates, and Yemen. About 10 per cent of the total catch is taken (i.e. reported) by non-coastal countries, and comprise principally of tuna and tuna-like species, in particular skipjack and yellowfin tuna.

The growth of the total catch has remained fairly stagnant from 1993 onwards, after an annual growth rate of about 6 per cent in the 1980s. The strong growth in the 1980s, to a substantial part, was contributed by the rapid expansion of the catch of tuna and tuna-like species of nearly 20 per cent per annum. Small pelagic species have depicted, on average, a slight growth trend of 1.4 per cent per annum during the last three decades. As the abundance of small pelagic species is heavily influenced by climatic and oceanographic conditions, strong inter-annual fluctuations are typically observed of these species. In contrast, the catches of demersal species (redfishes, croakers, drums, etc.) have increased relatively steadily since 1950 at a rate of nearly 4 per cent per annum, with particularly large increases since the early 1980s coming from various species of croakers and drums.

Catches of large pelagics, principally tuna and tuna-like species, have increased relatively steadily since the 1950s, with large increases in skipjack and yellowfin tuna being reported in the 1980s because of the expansion of large-scale purse-seine and longline fisheries by mostly vessels of long-distance fishing nations, including France, Spain, Japan, Republic of Korea, and Taiwan (Province of China). Relatively small-scale fishing vessels of Sri Lanka and the Maldives have also contributed significantly to higher tuna catches. The growth has slowed down since the mid-1990s as raw material prices for canned tuna have experienced a sharp decline to an uneconomic low level of below US\$400 per tonne because of over-supplies. This decline was arrested and prices re-bounded

³FAO, 1997. Review of the state of world fishery resources: marine fisheries. FAO Fisheries Circular. No. 920. Rome, FAO. 1997. 173 p. The chapter on the western Indian Ocean has been prepared by Ross Shotton and the chapter on the eastern Indian Ocean by Purwito Martosubroto. The data were updated and the text revised, as appropriate, by the author of the current paper.

⁴If not otherwise indicated, growth rates refer to compounded annual averages.

to around US\$800 in this millennium, largely because of a concerted action taken by the World Tuna Purse-Seine Organization to reduce catches by large purse-seiners.

While total crustacean catches appear to have been relatively constant since the early 1970s, the catches of high-value penaeid shrimps have increased sharply since the mid-1980s, but stabilized in more recent years as stocks are fully fished. A large part of the shrimp catch is exported to, primarily, Japan, USA and countries of the European Union (EU).

From a relatively small catch of less than 9000 tonnes in 1970, the production of squids and cuttlefish increased strongly by nearly 10 per cent per annum to a high of nearly 150,000 tonnes in 1997, and then declined to 116,000 tonnes in 1999. Squids and cuttlefish are also important internationally traded products.

2.2 *Eastern Indian Ocean*

The eastern Indian Ocean includes the Bay of Bengal in the north, the Andaman Sea and the northern part of the Malacca Straits in the east, and the waters around the west and south of Australia. The main shelf areas include those of the Bays of Bengal and Martaban and the narrower shelf areas on the western and southern sides of Indonesia and Australia. Most of the coastal fisheries are concentrated in these shelf areas and are the main fisheries in the region. The resources range from typical tropical species found in the northern part of the area to temperate species in the waters of the southern latitudes west and south of Australia.

The fisheries of the eastern Indian Ocean are characterized by increased fishing pressure, especially in inshore areas. The coastal areas off the east of India, the west of Thailand and the south coast of central Java are good examples of areas where fishing pressure has kept increasing. Knowledge of the fish stocks is generally poor and management actions taken have usually been on an ad hoc basis, in most cases with little scientific backup.

The total catches in the eastern Indian Ocean Region increased nearly fourfold, from 1.13 mn tonnes in 1970 to 4.32 mn tonnes in 1999. Tuna and tuna-like species, squids and cuttlefish, red fishes, mackerels and jacks increased at higher average growth rate than the 4.8 per cent per annum reported for the total catch. There has been only a slight drop in the average growth rate in the 1990s to 4.2 per cent, higher than the 3.8 per cent per annum reported in the 1980s.

Catches of five countries (India, Indonesia, Malaysia, Myanmar and Thailand) account for over four-fifths (85 per cent) of the reported catch in 1999. The absence of Bangladesh as a major marine fishing nation, despite a large population, is due to its historical focus on the large freshwater fishery resources. The catches of Australia made up less than 3 per cent of total catches by weight, but contributed a much higher proportion in terms of their economic value.

Thailand, with an average growth rate of 11 per cent, and Indonesia, with 9.4 per cent per annum, showed, by far, the fastest expansion in marine catches in the eastern Indian Ocean Region, but the growth rate has slowed down in the 1980s and 1990s to below 9 per cent, in the case of Thailand, and below 7 per cent, in the case of Indonesia. Notable is the strong growth in Sri Lanka's catches in the 1990s, with 4.4 per cent per annum, after stagnating catches in the 1980s. This has been largely due to a more than doubling of tuna and tuna-like catches in the 1990s with the introduction of the so-called multi-day boat fleet.

Six major species groups dominate the catch; these include redfishes, small pelagics, mackerels, jacks, tunas and tuna-like species, and shrimps. Over one-third of the total catch is reported as miscellaneous fishes, principally comprising small fishes and juveniles of some high-valued fishes. Although the continued increase of catch of this group may indicate the increase in fishing pressure and of unselective fishing practices, the relatively high figure is partly also caused by poor and incomplete statistical recording in several countries.

Most of the catch from coastal fisheries is used for local consumption. Fish is generally considered an affordable source of protein by most people in the region. Shrimp and tuna are the main export commodities. Overexploitation of shrimp resources in coastal waters has reduced the amount of exports from capture fisheries, and, in many countries in the region, there is a growing tendency for exports to come from the aquaculture sector. While the majority of tuna catches are from coastal fisheries, skipjack and yellowfin tuna, which form the major part of the tuna exports, are caught offshore. During the last decade, some countries have developed offshore fishing for tuna, notably longlining, in the case of Indonesia, and purse-seining, in the case of Thailand.

The main fisheries in the southern part of the eastern Indian Ocean are the fisheries off the west and southwest coast of Australia. The lobster fishery is one of the important fisheries in this area.

In general, the fisheries have been relatively steady since the 1980s, except for tuna catches that experienced a worrying decline from a high of some 20,000 tonnes in the mid-1980s to less than one-third that amount in more recent years. In response to the decline, Australia, Japan and New Zealand co-operated in the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) to achieve better fisheries management.

3 Fisheries Management Issues in the Indian Ocean Region

Unsurprisingly, being of such a vast and diverse nature, this region depicts the full range of fisheries management problems that have become a pervasive feature of the world's fisheries during the last several decades. They include:

Biological overexploitation of many coastal fishery resources, especially valuable, bottom-dwelling finfish resources. The extent of biological overexploitation is camouflaged, to some degree, in aggregate catch figures by ecosystem changes as the biomass decline of long-lived species is substituted by more short-lived species that have a greater resilience to high levels of fishing effort.

Excessive fleet sizes are pervasive in the region and estimated, at the global level, in the order of 30 to 40 per cent. The extent of overcapacities in any specific fishery is usually directly related to the potential of the fishery resource to generate resource rent. The amount of potential rent, as a share of the value of the catch, can be as high as 70 per cent and as low as zero. The share is primarily influenced by the abundance of the resource, the market price of the species and harvesting costs, which, in turn, are influenced by how easily the resource can be exploited with the available fishing technologies. As many fisheries in the region continue to be open-access, i.e. no effective controls are in place to limit the growth of fishing capacity and fishing effort or to limit catches through a quota regime, the high resource rent potential manifests itself initially in high returns to the owners of fishing vessels. This high profitability attracts new entrants into the fisheries as well as incites current

operators to invest in technological improvements of fishing craft and gear, causing the fishing power to augment. The capacity and effort expanding investments commonly continue to take place until the time when the fishery has become unprofitable and crew incomes have dropped to a low level.

Discarding in commercial fisheries has attracted considerable attention over the last decade as part of the debate on the appropriate utilization of the world's fisheries resources.⁵ Discarding is too often seen solely as the result of careless fishing. In general, however, it results from a number of factors, the nature of which is biological (the multi-species nature of the resources), technological (the difficulty of developing 100 per cent selective gear and practices, and economic (unprofitable holding and conserving of catches of low or no commercial value). However, there appears to remain a large scope for shifting from largely unselective bottom trawling to other types of gear. In the absence of specific and effective regulatory provisions or economic incentives to discourage discarding, the problem is known to become potentially worsened by management through individual transferable quotas (ITQs) of multi-species fisheries and quota-induced high-grading in single species fisheries.⁶ With the exception of some Australian fisheries, no individual quota management regime has been established in the region.

The impact of discarding is a complex issue, depending on local situations and demand, quality and commercial potential value of the discards, or their impact on system productivity. In general, however, discarding is considered both a waste of resources and a threat to biodiversity. In view of the full or overexploitation of many wild fish stocks, discarding has caused particular concern for the availability of fish to large numbers of poorer consumers in developing countries to whom fish is a major source of their animal protein supplies. The food security implications have been underlined in the 1996 Kyoto Conference and the adopted Kyoto Declaration on the sustainable contribution of fisheries to food security.⁷

Low profits or even losses and low crew incomes are typically observed in fisheries that have been subject to open access and heavy fishing pres-

⁵United Nations General Assembly (UNGA) Resolutions 49/118 of the Forty-ninth Session of the UNGA of 1994 and 50/25 of the Fiftieth Session of the UNGA of 1995 were concerned with fisheries by-catch and discards and their impact on the sustainable use of the world's oceans and seas. The matter was also considered at the 22nd Session of the Committee on Fisheries, Rome, Italy 17-20 March 1997 based on a paper by the FAO Secretariat (COFI/97/Inf.7).

⁶A comprehensive discussion is provided in Pascoe, Sean. 1997. By-catch Management and the Economics of Discarding. FAO Fisheries Technical Paper No. 370.

⁷Report of the International Conference on the Sustainable Contribution of Fisheries to Food Security, Kyoto, Japan, 4-9 December 1995.

sure for a prolonged time. Precipitous collapses in overall catches, however, have not been observed in the tropical fisheries of the Indian Ocean Region, possibly because of biomass substitution effects. As a consequence, no sharp drops in fishing activities or in employment as a result of biological and economic overfishing have been observed in the region.

Conflicts among fishers using different types of fishing gear and different scales of fishing technology are pervasive in unmanaged or badly managed fisheries. These are especially common between small-scale fishers using boat-seine and encircling nets, hooks-and-line and gillnets, and small and medium-sized industrial trawlers and purse-seiners that operate in near-shore waters and exploit the same species as the small-scale sector. Apart from direct competition over scarce fish stocks, the active nature of the industrial operations can cause damage to artisanal fishing gear. Reports of severe and often fishing conflicts in the Indian Ocean Region were more common in the 1970s and 1980s but appear to have declined in both frequency and severity since then. While conflicts continue to be pervasive in the region, the lower incidence of violent conflicts may be attributable to measures taken by governments to avoid the direct interaction between industrial and small-scale fisheries through the establishment of reserved in-shore areas for small-scale fishers (e.g. Malaysia), the placement of artificial reefs in near-shore waters to detract from the use of active fishing gear, especially bottom trawl (e.g. Thailand), as well as the banning of trawl gear in certain areas (e.g. Indonesia). The level of conflict may also have declined with the increasing adoption of motorized fishing craft by small-scale fishermen that allow not only the adoption of similar active fishing gear (e.g. small-scale trawls and purse-seines) but also for the extension of the range of fishing activities into deeper and more offshore waters. The increased range of fairly small-scale fishing vessels has resulted, during the last decade, in a growing number of incidents of small-scale fishers accidentally, or intentionally, entering the exclusive economic zones (EEZs) of foreign countries. Not infrequently, these fishers have become subject to arrest and have, at times, been held for prolonged periods.

Competition over migratory fish stocks, especially tuna and tuna-like species, is not confined to fleets of a single country but pits the interests of

vessels of long-distance fishing nations in the Indian Ocean Region against those of small-scale fishers who have exploited these stocks for centuries, as is the case of the traditional pole-and-line fishery for skipjack tuna in the Maldives. In the particular case of the skipjack fishery, while stocks still appear to be in a fairly healthy state, the massive expansion of industrial purse-seine production in the 1990s has caused a surreptitious drop in average sales prices, making the traditional technology, though greatly modernized in recent years, unprofitable. While the recent action taken by the World Tuna Purse-Seine Organization has led to reduced skipjack and small yellowfin tuna catches and a recovery of average sales prices, the average production and collection costs per tonne of the Maldivian pole-and-line fishery compare unfavourably with those of the large-scale industrial purse-seiners.

While there is still insufficient information for a rigorous stock assessment of yellowfin tunas, the Indian Ocean Tuna Commission (IOTC), working party on tropical tuna, considered that total catches of yellowfin tuna appear to have reached a plateau, and may now be at, or approaching, maximum sustainable yield (MSY) for the current fishing pattern. It noted that the recent trend of increased fishing pressure on juvenile yellowfin from purse-seine fishery on drifting objects may decrease the sustainable yield of the stock.⁸

Bigeye tuna, and especially southern bluefin tuna, are the two species that cause the greatest management concern among the highly migratory tuna species in the Indian Ocean Region. They can be found throughout the world's southern oceans, spending most of their lives in cold waters (in deep waters and southern waters) where they are caught as adults, with longlines, primarily for sale in the high-priced Japanese sashimi market (having a preference for fatty flesh that serves the animals as insulation against the cold water). As juveniles, they can be captured in more surface tropical and sub-tropical waters. Southern bluefin tuna breed in the Indian Ocean's warm waters, south of Java, Indonesia, from where they migrate as juveniles south down the west coast of Australia. When they are 40-50 cm long (they can grow up to 2 m long and weigh 200 kg), they move either east, through the Great Australian Bight, towards New Zealand, or west, through the Indian Ocean, towards South Africa⁹.

⁸IOTC. 2000. Report of the 5th Session of the Indian Ocean Tuna Commission, Victoria, Seychelles, 11-15 December 2000. Victoria, Seychelles.

⁹Deere, C.L. 2000. *Net Gains: Linking Fisheries Management, International Trade and Sustainable Development*. IUCN, Washington DC

IOTC's working party on tropical tuna stated that the status of bigeye tuna should be considered uncertain but of concern.¹⁰ More serious is the condition of the southern bluefin tuna stock whose biomass is reported to be "well below the minimum level recognized internationally as acceptable for supporting sustainable utilization".¹¹

Illegal, unreported and unregulated (IUU) fishing activities have become a pervasive problem in many of the world's oceans. Whereas IUU fishing occurs, or has the potential to occur, in all capture fisheries, both in marine and inland waters, it has raised particular concern with regard to fisheries on the high seas for highly migratory and straddling fish stocks as well as pure high-seas stocks, i.e. fishery resources whose entire life cycle is within waters outside of national jurisdictions (i.e. EEZs).¹² The IOTC estimated that, in 1996, IUU fishing amounted to nearly 100,000 tonnes in the Indian Ocean, i.e., 10 per cent of all reported landings of tuna and tuna-like species. IOTC reported that this figure might be an underestimate.

IUU fishing is often associated with the activities of so-called "flag-of-convenience" (FoC) vessels. FoC vessels, through re-flagging, can avoid the need to adhere to the rules and regulations of their original flag State or those that the flag State is committed to enforce under the provisions of regional fisheries management organizations (RFMOs). Even where no intentional re-flagging has occurred, RFMOs experience difficulties in applying responsible fisheries management measures to the vessels of non-Parties, particularly those on the fishing vessel registers of so-called "open register" States. This has resulted in various proposals, ranging from making efforts to encourage such non-Parties to join the regional fisheries bodies and/or comply with their management measures, to implementing bans of various sorts against them, such as denying port access, banning imports of fish, outlawing trans-shipments, etc.¹³

In the Indian Ocean, the problem of IUU fishing is especially pronounced among a large number of small (less than 100 GT/24 m) longline vessels, based more or less permanently in Indian Ocean ports, which report neither to their flag authori-

ties, nor to those of the countries where they are based. There is a growing fear that the long-line fishery for especially bigeye tuna may overexploit this high-value stock. This, and low economic returns, or even losses, have recently prompted Japan to unilaterally reduce by 20 per cent its distant-water longline fleet. The benefits from this move might accrue to IUU fishing fleets if measures are not taken to constrain their activities. Similarly, because of the migratory nature of the target species, the aspirations of coastal countries to enter this fishery could be compromised.¹⁴

Degradation of the marine habitat is caused by man-made environmental changes which have toxic or otherwise damaging effects such as water pollution, impairment of coral reefs, removal of mangroves, smothering of seagrass beds, etc. These changes adversely affect, respectively, the productivity and abundance of resources and the quality of fish as a consumer good. Globally, it is estimated that 90 per cent of the world's fish production is dependent on critical coastal zone habitats at some time in the life cycle. Critical habitats include estuarine areas, coral reefs, mangrove forests and other wetlands, tidal flats and seagrass beds, which provide essential nursery and feeding areas for many coastal and oceanic aquatic species.

The geographic origins of damaging habitat impacts can reach far inland, not infrequently straddling national boundaries, and their sources commonly include many different economic activities such as different industries, agriculture, forestry, and human settlements. These effects also arise from within the fisheries sector through inappropriate siting of fish and shrimp ponds in mangrove areas, high stocking densities, excessive feeding and inappropriate use of chemicals in coastal aquaculture, as well as the use of destructive or unselective fishing methods in marine fisheries, including explosives, poison, and excessive bottom-trawling. Furthermore, a worldwide concern is the adverse impact of global warming on, especially, coral reefs.

Social disruption typically occurs in coastal areas where there is intense competition over scarce natural resources as a consequence of rapid development of an unplanned and unregulated nature. Social disruption is felt mostly at the local

¹⁰IOTC. 2001. op.cit.

¹¹CCSBT (1998b) Report of the Resumed Fourth Annual Meeting of the Commission for the Conservation of Southern Bluefin Tuna, Canberra, Australia, 19-21 February, 1998. p.1.

¹²Doulman, D. Illegal, Unreported and Unregulated Fishing: Mandate for an International Plan of Action. Paper submitted to the Expert Consultation on IUU Fishing, Sydney, Australia, 15-19 May 2000.

¹³Bray, K. 2000. A Global Review of Illegal, Unreported and Unregulated (IUU) fishing. Paper submitted to the Expert Consultation on IUU Fishing, Sydney, Australia, 15-19 May 2000.

¹⁴Bray, K. (2000) Op. cit.

level and can take the form of displacement of traditional community-based activities in agriculture, forestry and fisheries; marginalization of resident resource users and non-resource users due to increasingly inequitable distribution of income; decreasing employment opportunities, with shifts towards unskilled and seasonal labour; migration towards urban centres; and deteriorating nutritional and health conditions of people.¹⁵

4 Main Factors Causing Overfishing and Habitat Degradation

4.1 *Open access, subsidies and lack of gainful employment opportunities*

At the origin of the pervasive nature of overfishing and excess harvesting capacities are, on the one hand, the open-access condition that continues to govern many of the Indian Ocean marine fisheries and, on the other hand, the direct and indirect subsidization of fisheries, which worsens the consequences of market failure associated with open access. While the progressive establishment of EEZs since the mid-1970s has created the necessary institutional condition for the control of access over most marine fishery resources, governments have, first, encouraged the building up of fishing capacity in the name of "development" and, after having inadvertently developed an overcapacity, encountered serious political, economic, social and cultural difficulties to effectively restrict access and contain or reduce expansion of fishing capacity and fishing effort. At the heart of these difficulties is the need to reduce and contain the number of people who are employed in capture fisheries and who derive their livelihoods from them. In most countries of the Indian Ocean Region, this need stands in contrast to a still rapidly growing population, which, in many instances, can neither be gainfully employed in agriculture nor absorbed at the required rate in industry or the service sector. In some countries, there continues to be an inflow of labourers from agriculture into the marine fisheries sector, as the latter offers higher incomes and acts as employer of last resort. Globally, employment in fisheries has grown in the period 1970 to 1990 by two and a half

times to nearly 30 mn persons and has increased more rapidly than the population as a whole and more rapidly than employment in agriculture¹⁶.

While mobility into fisheries is frequently high and rarely restricted, there are several hurdles that impede labour mobility from fisheries into other sectors of the economy. The level of education among fishing communities is often below average and they have a distinct maritime culture and tradition. The maintenance of this tradition has become an issue in its own right, which has attracted support from the public at large and which may partly explain the substantive amounts of subsidies channelled into fisheries. Other reasons for subsidization include poor economic performance of fleets exploiting overfished stocks; the desire to re-deploy excess capacities into third countries through fishing agreements; poverty and marginalization of artisanal fisheries in some regions, especially in South and Southeast Asia; maintenance of fishing employment in remote coastal areas; and promotion of offshore and long-distance fisheries as a means to reduce fishing pressure from coastal waters.

4.2 *Complexity of integrated management of coastal zones*

The intricate management issues in the coastal zone are caused by complex human-nature interactions, multiple and interdependent resource use patterns and market failures, especially in the form of cost externalities, i.e. the imposition of costs by an economic activity on other resource users, without carrying the burden of—or paying a price for—this action. Cost externalities are pervasive where there is an unregulated or unco-ordinated use of State and common-property resources and where well-defined property rights over coastal resources are absent or impossible or undesirable to establish and enforce. Integrated management efforts of coastal areas are often hampered by high costs of acquiring essential management information, the complex nature of establishing an effective regulatory framework requiring strong interagency coordination and stakeholder participation, and the difficulty of attaining high compliance with management rules and regulations.¹⁷

¹⁵Barg, U., P. Martosubroto and R. Willmann. 1998. Towards Sustainable Coastal Management: Selected Issues in Fisheries and Aquaculture. In, *Entwicklung und Indischer Raum*. Jahrgang 32. Heft 2/98. pp. 3-7.

¹⁶Garica, S.M. and R. Willmann. 1999. *Responsible Marine Capture Fisheries: Main Global Issues and Solutions*. Mimeo. FAO. Rome

¹⁷Willmann, R. 1997. Fisheries Management Within the Framework of Integrated Coastal Area Management. In, *Proceedings of the South Asian Workshop on Fisheries and Coastal Area Management—Institutional, Legal and Policy Dimensions*, Chennai, India, 26-29 September 1996, International Collective in Support of Fishworkers (ICSF), Chennai, India.

5 International Management Instruments¹⁸

At the conclusion of UNCLOS in 1982, it had been assumed, implicitly at least, that the adoption of extended jurisdiction in international law would lead to a significant improvement in the way in which the world's marine fisheries resources were managed and utilized. However, the 1991-1992 FAO analysis¹⁹, drawing together data and related fisheries information in a novel way, showed that such expectation from the "new economic order" in fisheries had not been generally realized. Moreover, the FAO study provided, for the first time, a global assessment of the poor economic performance of world fisheries. This analysis, widely quoted in the international fisheries press and literature, has become a benchmark and has stimulated a large number of further studies^{20, 21, 22}. It also has provided impetus to a range of initiatives at global, regional and national levels to improve fisheries management and to make the necessary adjustments in institutional arrangements and incentive structures to encourage responsible fisheries.

The 1991-92 FAO analysis was undertaken against a background of a series of preparatory meetings for United Nations Conference on Environment and Development (UNCED) that served to promote broad international awareness and concern about the manner in which many of the world's natural resources were being used. In May 1992, one month prior to UNCED, the International Conference on Responsible Fishing was convened in Cancún by the Government of Mexico, in collaboration with FAO. The Conference had its roots in the 1991 Nineteenth Session of the FAO Committee on Fisheries (COFI) which recommended, inter alia, that the concept of responsible fishing be developed and that an instrument to this effect be elaborated.²³

The Conference adopted the Cancún Declaration, which provided input to the UNCED process and gave impetus to the elaboration of the Code of Conduct for Responsible Fisheries.

In combination, the 1991 Session of COFI, the Cancún Conference and UNCED led to the launching of the following three international and complementary fisheries initiatives:

1. *the 1993-95 United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Conference), which led to the opening for signature in December 1995 of the UN Fish Stocks Agreement;*
2. *the 1992-93 negotiation of the legally binding Compliance Agreement, which was adopted in November 1993 by the Twenty-seventh Session of the FAO Conference; and*
3. *the 1993-95 negotiation of the Code of Conduct for Responsible Fisheries, and its adoption by consensus in October 1995 by the FAO Conference.*

The UN Fish Stocks Conference is one of several international activities with relevance to fisheries pursuant to the 1992 UNCED (or Rio Conference) and its two principal outcomes: (1) Rio Declaration and (2) Agenda 21. Others include the 1995 Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA), adopted in Washington in 1995, and the 1995 Jakarta Mandate on Marine and Coastal Biological Diversity. The latter is the outcome of the second Conference of the Parties to the Convention on Biological Diversity (CBD). CBD was opened for signature at the Rio Conference and entered into force in 1993.

A feature of all recent international negotiation processes, including the UN Fish Stocks Conference and the Code negotiations, is the broad interest

¹⁸If not otherwise specified, this section draws heavily upon the following two papers: Willmann, R. 1997. International Instruments on Fisheries and of Relevance to Fisheries. Paper presented at the first meeting of the World Forum of Fish Harvesters and Fishworkers, New Delhi, India, 17-21 November 1997. (op. cit.)

¹⁹FAO 1993. Marine Fisheries and the Law of the Sea: A Decade of Change (Special chapter (revised) of The State of Food and Agriculture 1992), FAO Fisheries Circular No. 853.

²⁰Doulman, D. 1998. the Code of Conduct for Responsible Fisheries: the Requirement for Structural Change and Adjustment in the Fisheries Sector. FAO. Rome. (<http://www.fao.org/WAICENT/FAOINFO/FISHERY/agreem/codecond/codecon.htm>)

²¹Garcia S.M. and C. Newton. 1997. Current Situation, Trends and Prospects in World Capture Fisheries. In E.K. Pikitch, D.D. Huppert, and M.P. Sissenwine (Eds). Global Trends: Fisheries Management. American Fisheries Society Symposium, 20. Bethesda. Maryland. USA: 3-27

²²Grainger Richard. and Serge M. Garcia (1996) Chronicles of Marine Fishery Landings (1950-1994): Trend Analysis and Fisheries Potential. FAO Fisheries Technical paper, 359:51 p.

²³It should be noted that while the 1991 Session of COFI focused on responsible fishing operations, because of the concern with selectivity of fishing operations (inter alia the dolphin-tuna, shrimp-turtle, and large-scale pelagic driftnets problems), the Cancún Conference broadened the concept to the more holistic concept of responsible fisheries, of which responsible fishing operations were only a part, (Doulman, op. cit.)

of non-governmental organizations (NGOs) in fisheries and marine issues, their high technical competence and their influence on the drafting of provisions important for their constituencies, and their focus on protection of migrants and specific categories of workers such as seafarers including fishworkers, and others.

Before discussing these recently concluded international instruments, it appears appropriate to refer first to the possibly most innovative and complex international instruments ever negotiated in human history, the 1982 United Nations Convention on the Law of the Sea (1982 Convention), which formally entered into force not until 16 November 1994, i.e. one year after the minimum number of 60 States had deposited their instruments of ratification or accession. The 1982 Convention was innovative in several aspects (e.g. the introduction of an international dispute settlement mechanism), and set important precedents for the negotiation procedures of complex international agreements in other areas.

5.1 *The 1982 United Nations Convention on the Law of the Sea (1982 Convention)*

The United Nations Convention on the Law of the Sea was opened for signature on 10 December 1982 in Montego Bay, Jamaica. This marked the culmination of more than 14 years of negotiations and work involving participation by more than 150 countries, representing all regions of the world, all legal and political systems and the spectrum of socioeconomic development. The 1982 Convention embodies and enshrines the notion that all problems of ocean space and ocean resources are closely interrelated and need to be addressed as a whole.²⁴ An overview of the 1982 Convention is given in Annex 1 as prepared by the Division for Ocean Affairs and the Law of the Sea, United Nations Office of Legal Affairs (UN/DOALOS).

The two key 'fisheries' articles of the 1982 Convention are *Article 61 Conservation of the living resources* and *Article 62 Utilization of the living resources* which are reproduced in Annex 2. There are several principles contained in them, including for coastal countries to ensure the conservation of the living resources and to promote their optimum utilization. The conservation objective is expressed by the requirements (i) to determine the total allowable catch (TAC) in the EEZ, (ii) guided by the best available scientific evidence to avoid overex-

ploitation of target species and of associated or dependent species, (iii) maintain or restore harvested populations at levels which can produce the maximum sustainable yield, and (iv) to exchange relevant scientific information with all States and organizations interested in the resources.

The principal idea in promoting the objective of optimum utilization of the living resources is that those States that do not have the required fishing capacities should make available surplus fishery resources to other States, in particular to landlocked and geographically disadvantaged developing States of the same region²⁵, and to those States whose nationals have habitually fished these resources. In practice, Articles 69 and 70, specifying the respective rights of landlocked and geographically disadvantaged States vis-à-vis such surplus, were hardly ever applied.

The interpretation of what in fact amounts to "surplus" remains contentious until today because of the ambiguity of the text and the real practical difficulties of measuring the abundance of fishery resources and the size of fishing capacities. The ambiguity of the text results from two specific formulations: (a) in Article 61(3), the desirable stock level is given as the one producing the maximum sustainable yield but with the suffice "*as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States...*"; and (b) Article 62 (3), with reference to allocating a part of the total allowable catch (TAC) to other States: *In giving access to other States to its exclusive economic zone under this Article, the coastal State shall take into account all relevant factors, including, inter alia, the significance of the living resources of the area to the economy of the coastal State concerned and its other national interests...*"

Not unexpectedly, it has proven impractical for most coastal States, especially in the tropics and sub-tropics, to determine the TAC by species and assess for each of them that part which is in surplus of the State's own harvesting capacity. Furthermore, even if the difference could be determined between the TACs and domestic harvesting capacity, the exploitation of the surplus by a foreign fleet would usually affect the economic performance of the local fleet. This results from the fact that, for most fish stocks, the catch per unit of fishing effort declines as total aggregate fishing effort increases. Therefore, even though the domestic fleet may still

²⁴UN, 1983; see also the Internet site <http://www.un.org/Depts/los/losconv1.htm>.

²⁵Note that this does not apply to landlocked and geographically disadvantaged developed States.

be able to take the same amount of catch, its profitability would be reduced by the harvesting activities of a foreign fleet and, wherever a sharing system prevails, the income of crew members would also decline.²⁶

At the time when the Convention was signed in December 1982, the reference in it to a target stock size that can produce the maximum sustainable yield (MSY) was subject to critique by not only fisheries economists but also fisheries biologists. From an economic point of view, at the stock size producing MSY, a fishery may already show serious signs of economic overfishing. From a biological point of view, fishing at the MSY level not only increases the instability of the ecosystem but also neglects species interactions (Garcia et al. 1986;196). In addition, given the inherent uncertainties in estimating stock abundance, a precautionary approach to resource conservation may require targeting stock sizes higher than those producing MSY.²⁷ The idea of precaution was subsequently incorporated into the UN Fish Stocks Agreement discussed further below.

Article 61 (3), however, taken by itself, may be interpreted more literally in that a State can allow harvesting activities which reduce stock size below the MSY level for economic and socioeconomic reasons, such as to provide employment and income to fishing communities. Such an interpretation, apart from its short-term outlook, could hardly be taken to justify the allocation of surplus resources to foreign fishing vessels. It may also be seen to run counter to the coastal State's basic obligation expressed in paragraph (2) of the same Article not to endanger by overexploitation the maintenance of the living resources in the EEZ. Today, the prevailing view of fisheries biologists is that any form of biological overfishing entails a risk to the maintenance of the concerned fish stock.

Article 62 (4) provides certain elaborations on the conditions that may be placed upon foreign fishing vessels harvesting the surplus resources in a coastal country's EEZ. These may include licensing for fees and other forms of remuneration; determining the species and fixing quotas; regulating harvesting seasons, areas and methods; requiring the conduct of research and training and the placement of observers on board of fishing vessels; laying down the terms and conditions for joint ventures, requiring the catch to be landed in domestic ports; and specifying the information to be sub-

mitted. While most fisheries agreements between coastal and foreign fishing States contain some or most of these provisions, in practice, it has often been difficult to ensure compliance by foreign fishing fleets with the laws and regulations of the coastal country as prescribed in Article 62 (4). The difficulties of enforcement of laws and regulations are, however, one may add, rarely specific to foreign fishing but apply equally to domestic fleets.

Article 73 discusses specifically the enforcement of fisheries laws and regulations of the coastal State in its EEZ. It is of particular significance in view of the human hardship that has been created by the seizure of vessels and crew, which were found to fish illegally in countries' EEZs. While law enforcement requires deterrence, Article 73 (2) and (3) require States to promptly release arrested vessels and their crew upon the posting of reasonable bond or other security and that penalties for violations of fisheries laws and regulations in the EEZ may not include imprisonment and, in the absence of agreements to the contrary, no form of corporal punishment. In practice, the arrests of foreign fishermen for extended periods of time, analogous to imprisonment, have been observed in the Indian Ocean Region as well as elsewhere.

Part VII (Articles 86-120) and Part XII (Articles 192-237) of the 1982 Convention deal with high seas and the protection and conservation of the marine environment respectively. Article 87 specifies the meaning of the *freedom of the high seas* and Articles 116 to 120 address the conservation and management of the living resources of the high seas. The implementation of these Articles by countries and regional fisheries organizations will be facilitated and strengthened by the UN Fish Stocks Agreement (see below).

The provisions of Part XII on the protection of the marine environment are of a general nature but have, over the years, been complemented by more specific legal instruments, including conventions negotiated under the aegis of the International Maritime Organization (IMO) and guidelines such as the 1985 Montreal Guidelines for the Protection of the Marine Environment from Land-based Sources of Pollution (see below).

In summary, the 1982 Convention has been a milestone in human history by setting a precedent for the creation of complex international rules, including dispute settlement mechanisms and the assignment of rights over resources, which, formerly,

²⁶On this point and other aspects of surplus assessment, see the 1986 article in Marine Policy of the following three eminent fisheries scientists: S. M.Garcia, late J.A.Gulland and E. Miles.

²⁷See FAO, 1996, for details on the precautionary approach to fisheries.

were “global commons” through a peaceful negotiation process. The latter has itself created highly valuable insights on the conditions needed for successful bargaining, which has had a direct bearing on many subsequent international and regional negotiations in various areas, including trade and peace.

5.2 *Rio Declaration and Agenda 21*

The 1992 United Nations Conference on Environment and Development (UNCED), also called the Earth Summit or the Rio Conference, has probably been the largest international conference ever organized in human history. Except for the Convention on Biological Diversity (CBD), the Rio Conference has not resulted in any binding international agreement. The Rio Declaration on Environment and Development proclaims 27 principles addressed to States, individuals, groups and the international community in general. A summary of the main contents of each principle is given in Annex 3.

The second main outcome of UNCED is Agenda 21, a blueprint for action for global sustainable development into the 21st Century. It comprises four main sections addressing (1) the social and economic dimensions (international co-operation, combating poverty, changing consumption patterns, demographic sustainability, human health and settlement; integration of environment and development in decision-making); (2) conservation and management of resources for development (i.e. atmosphere, land resources, combating deforestation and desertification, managing fragile ecosystems, sustainable agriculture and rural development, conservation of biodiversity, sound management of biotechnology, protection of oceans, seas, coasts and their living resources); (3) strengthening the role of major groups (i.e. women, children and youth, indigenous people, NGOs, local authorities, workers and their trade unions, business and industry, scientific and technological community, farmers); and (4) means of implementation (financial resources, technology and know-how transfer, science and education, awareness creation, capacity-building, international legal instruments and arrangements, information for decision-making).

The full title of Chapter 17, Section 2, reads: “Protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas and coastal areas and the protection, rational use and development of their living resources”. It comprises seven programme areas dealing with (a) integrated

coastal and marine management, (b) marine environmental protection, (c) sustainable use and conservation of marine living resources of the high seas, (d) sustainable use and conservation of marine living resources under national jurisdiction, (e) critical uncertainties for the management of the marine environment and climate change, (f) strengthening international, including regional, co-operation and co-ordination and (g) sustainable development of small islands. The emphasis of programme area (a) is on strengthening integrated planning and co-ordinating mechanisms for the sound management of multiple-use resources and for conflict resolution and prevention.

Area (b) addresses the three principal sources of marine pollution: (i) land-based activities which are responsible for about 70 per cent of pollution, and (ii) maritime transport and (iii) dumping at sea, each of which contributes about 10 per cent. The 1995 Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), adopted in Washington in 1995, is a direct follow-up to this part of Agenda 21 and based on the 1985 Montreal Guidelines for the Protection of the Marine Environment from Land-based Sources of Pollution. A summary of the specific objectives and targets of GPA are given in Annex 4. The International Maritime Organization (IMO) addresses pollution from maritime transport and dumping.

Programme area (d) lists some of the important problems faced in the management of living resources under national jurisdiction including overfishing, unauthorized fishing by foreign vessels, ecosystem degradation, overcapitalization and excessive fleet sizes, non-selective fishing gear, increasing competition between artisanal and large-scale fishing and between fishing and other types of activities. There has been considerable influence by non-governmental organizations, including those advocating the interests of fishworkers, on the objectives and the management-related activities listed in this programme area. States are called on to take into account traditional knowledge and interests of local communities, small-scale artisanal fisheries and indigenous people in development and management programmes. They should ensure the sustainability of small-scale artisanal fisheries by integrating their concerns into development planning and, where appropriate, encourage representation of fishermen, small-scale fishworkers, women and local communities and indigenous people. The rights of small-scale fishworkers and the special situation of indigenous

people and local communities are specifically acknowledged, including their rights to utilization and protection of their habitats on a sustainable basis.

Programme area (e) addresses research needs on the impact of atmospheric and climatic changes on the marine environment and living resources while programme area (f) spells out the special problems and needs of small island States and how they should be addressed. The main international follow-up to the latter was the United Nations Small Island Conference held in Barbados in 1994.

Chapter 15 of Agenda 21 is entitled "Conservation of Biological Diversity" and its primary objective is to support the implementation of the Convention on Biological Diversity (CBD). As the earth's oceans, seas and coasts are major repositories of biodiversity, the 2nd Conference of the Parties to CBD held in 1995 in Jakarta, Indonesia, dealt specifically with marine and coastal biodiversity. The main outcome of this Conference, the Jakarta Mandate, calls on governments to introduce integrated coastal area management, establish marine and coastal protected areas, ensure that coastal and marine resources are used within sustainable limits and mariculture practices are sustainable, and prevent the introduction of, and support the eradication of, alien species that threaten ecosystems, habitats or native species.

5.3 *The 1995 Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (UN Fish Stocks Agreement)*

The impetus for the need to strengthen the implementation of the 1982 Convention provisions with respect to fishing on the high seas arose because of serious concern in the late 1980s over driftnet fishing on the high seas, initially in the South Pacific region. The issue was discussed in the UN General Assembly, which adopted Resolution 44/225 on *Large pelagic driftnet fishing and its impact on the living marine resources of the world's oceans and seas*. FAO was directed in the resolution to convene an expert consultation on the matter. In it, and in subsequent inter-governmental consultations, the wider issues of the management of high seas fisheries came to the fore, which then found expres-

sion in a specific recommendation on this matter in Chapter 17 of Agenda 21.

Pursuant to this recommendation, the General Assembly of the United Nations (UNGA) convened in 1992 the UN Fish Stocks Conference with the following terms of reference: (1) identify and assess existing problems related to the conservation and management of straddling fish stocks and highly migratory fish stocks; (2) consider means of improving fisheries co-operation among States and (3) formulate appropriate recommendations.²⁸ The Conference held five substantive and one organizational session between April 1993 and August 1995. Remarkable was the large attendance of non-governmental organizations representing environmental, fishworkers, industry and other related interests.

Hayashi (1996) has categorized the contribution of the UN Fish Stocks Agreement to the 1982 Convention into three aspects: (1) facilitation of implementation of the Convention; (2) strengthening of the Convention regime and (3) development of general or framework rules set out in the Convention. Regarding the first point, the Agreement provides in, for example, Article 5, a number of specific ways how States may fulfil their obligations under the 1982 Convention to conserve and manage highly migratory and straddling fish stocks. These include some innovations to the 1982 Convention, such as the application of the precautionary approach, the requirement of States to take measures to prevent or eliminate not only overfishing but also excess fishing capacity and the duties to protect biodiversity and take into account the interests of artisanal and subsistence fishers.

The Agreement strengthens the 1982 Convention provisions on the collection and sharing of information and expands its dispute settlement provisions to all States, whether or not they are parties to the Convention (Hayashi 1996:55-56).

The most significant contribution of the UN Fish Stocks Agreement is in those areas where it further develops the 1982 Convention rules and principles. The precautionary approach was unknown in fisheries at the time the Convention was signed in 1982. Since about the mid-1980s, it has become increasingly adopted in national and regional legal instruments addressing primarily environmental aspects (Hayashi 1996). The approach calls in Article 6, *inter alia*, for taking explicitly into account uncertainties related to the size of fish stocks and the impact

²⁸Detailed reviews of the structure, process and outcome of the Conference can be found in Douman (1995) and Hayashi (1996), on whose writings this section is largely based.

of fishing on them and the laying down of precautionary reference points.

Among the most notable innovations introduced by the UN Fish Stocks Agreement is the notion of *compatibility of conservation and management measures* adopted in EEZs and on the high seas as detailed in Article 7. The scientific basis of compatibility is the biological unity of fish stocks and, thus the need to apply coherent management measures throughout their geographic range of exploitation. Article 7 requires coastal and long-distance water fishing nations to “agree upon the measures necessary for the conservation of these stocks” and, pending reaching such agreement, to enter into provisional arrangements of a practical nature. If no agreement can be reached within a reasonable period of time, any of the concerned States may invoke the dispute settlement procedures provided through the 1982 Convention (Hayashi, 1996).

Another innovation of the UN Fish Stocks Agreement is that it obliges States whose fleets exploit highly migratory and straddling fish stocks to either join existing regional fisheries organizations or to adopt the conservation and management measures instituted by them. Where no such regional organization or arrangement exists, States are required to establish new ones. Hayashi (1996:58) notes that “[T]he combined effect of these provisions is to exclude those States which are not members of the existing regional organization or do not agree to apply its measures from conducting fishing operations for the straddling stocks and highly migratory stocks in the area concerned, thus denying their freedom to fish on the high seas.”

The Agreement lays down more stringent flag State duties than contained in the 1982 Convention. In principle, no State is authorized to permit vessels flying its flag to fish on the high seas if it is not able to exercise effective control over them. This includes ensuring the compliance of its fleets with management measures agreed upon by regional fisheries organizations and the investigation and sanctioning of violations.

In respect to enforcement, the UN Fish Stocks Agreement goes even further by permitting any member State of a regional fisheries organization to board and inspect any fishing vessel in order to ensure compliance with adopted conservation and management measures.²⁹ It also introduced the new concept of “port State enforcement”, which

gives the port State the right to inspect catch, fishing gear, log books, etc. of a foreign fishing vessel which uses voluntarily its ports or offshore terminals.

The special requirements of developing States are acknowledged in Article 24 which mentions, in particular, in paragraph 2(a) “... the nutritional requirements of their populations or parts thereof;” and in paragraph 2 (b): “the need to avoid adverse impacts on, and ensure access to fisheries by, subsistence, small-scale and artisanal fishers and women fishworkers, as well as indigenous people in developing States, particularly small island developing States...”

In conclusion, the UN Fish Stocks Agreement strengthens and facilitates the implementation of the management and conservation provisions of the 1982 Convention applicable to straddling and highly migratory fish stocks. Its historic and revolutionary dimensions result from innovations in several important areas, including the concept of compatibility, obligations towards regional fisheries organizations and the monitoring and enforcement powers by non-flag and port States (Hayashi, 1996).

5.4 *The Code of Conduct for Responsible Fisheries*³⁰

The Code of Conduct for Responsible Fisheries (Code) was adopted by the FAO Conference at its 28th Session in 1995. It was negotiated over a period of two years in five formal sessions with the active participation of many of FAO’s member States and important national and international fisheries NGOs representing environmental, industry and small-scale fisheries and fishworkers interests.

The initial impetus for the concept of responsible fishing can also be traced back to the large-scale pelagic driftnet fishing issue and the discussion of it at the 1991 FAO Committee on Fisheries. However, it was the Declaration of Cancún that pushed forward the idea of a Code and called on FAO to initiate the process of its elaboration. This declaration emanated from a meeting at Cancún on responsible fishing hosted by the Government of Mexico in May 1992.

The Code, thus, was negotiated in parallel to the UN Fish Stocks Agreement and, in fact, certain formulations of the Code reflect the outcome of the negotiations at the UN Fish Stocks Conference. The

²⁹It appears that in particular this provision of Article 21 (1) currently impedes some countries to ratify the UN Fish Stocks Agreement. Entry into force requires 30 ratifications or accessions. As of September 2001, 29 such ratifications/accessions had been received by the Depositary.

³⁰See Edeson (1996) for a brief review of the Code.

Code, however, is far more encompassing than the Agreement. Its voluntary nature has enabled it to cover much more than could have possibly been included in a legal binding instrument such as the Agreement.

Articles 1 to 6 describe the Code's nature and scope, its objectives and relationship with other international instruments, directions for its implementation, monitoring and updating, the special requirements of developing countries, and general principles. The substantive technical part comprises Articles 7 to 12: Fisheries Management, Fishing Operations, Aquaculture Development, Integration of Fisheries into Coastal Area Management, Post-Harvest Practices and Trade, and Fisheries Research.

The Code is global in scope and directed toward all States and fishing entities, subregional, regional and global organizations, whether governmental or non-governmental, and all persons concerned with the conservation of fishery resources and the management and development of fisheries. Its objectives are very far-reaching and ambitious, including the establishment of general principles and standards of conduct for responsible fisheries and, *inter alia*, the establishment of specific principles and criteria for the elaboration of national policies. It specifies policy objectives such as the contribution of fisheries to food security and food quality, giving priority to the nutritional needs of local communities.

Article 6 encapsulates the "philosophy" of the Code in a set of general principles. The most significant contents of a few selected paragraphs are summarized below:

Paragraph 6.1 establishes that the right to fish carries with it the obligation to do so in a responsible manner. With regard to the objectives of fisheries management, responsible fisheries is understood to include the maintenance of the quality, diversity and availability of fishery resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development (see 6.2). It also includes the protection from destruction, degradation, pollution and other significant human impacts of all critical fisheries habitats in marine and fresh water ecosystems, such as wetlands, mangroves, reefs, lagoons, nursery and spawning areas (6.8).

Paragraph 6.13 calls on States to facilitate consultation and the effective participation of industry,

fishworkers, environmental and other interested organizations in decision making with respect to the development of laws and policies related to fisheries management, development, international lending and aid.

Paragraph 6.18 recognizes the important contributions of artisanal and small-scale fisheries and requests States to protect the rights of fishers and fishworkers, particularly those engaged in subsistence, small-scale and artisanal fisheries. Where appropriate, States should give them preferential access to traditional fishing grounds and resources in the waters under their national jurisdiction.

The substantive contribution of NGOs and INGOs to the Code negotiation process can be gauged from the fact that first drafts of some of the above summarized provisions were originally submitted by representatives of these organizations.³¹

Many of the paragraphs of Article 7, "Fisheries Management", and Article 8, "Fishing Operations", reflect the text of the UN Fish Stocks Agreement but extends their application to areas of national jurisdiction including implicitly to inland fisheries.

While adhering to the general principles of sustainability enshrined in UNCED's Agenda 21, the Code's Article 9, "Aquaculture Development", is an innovation in an international instrument. It provides comprehensive guidance for the development, planning, management and operation of aquaculture in a sustainable and responsible manner.

Article 10, "Integration of Fisheries into Coastal Area Management", is also innovative by emphasizing the protection of fisheries interests and the adequate representation and participation of such interests in the decision-making processes for integrated coastal management.

Article 11, "Post-Harvest Practices and Trade", establishes the needed link between the conservation and management of fisheries resources and their utilization and trade. While its main tenor is to promote the further liberalization of trade in fish and fishery products, it contains several important provisos such as that trade "*should not compromise the sustainable development of fisheries...*" (11.2.2) and that *States, aid agencies, multilateral development banks and other relevant international organizations should ensure that their policies and practices related to the promotion of international fish trade and export production do not result in environmental degradation or*

³¹The contribution of NGOs and INGOs to both the Code negotiations and the UN Fish Conference has been well analysed in a special issue of DEEP (Development Education Exchange Papers) published by FAO and produced by the International Collective in Support of Fishworkers (ICSF).

adversely impact the nutritional rights and needs of people for whom fish is critical to their health and well being and for whom other comparable sources of food are not readily available or affordable" (Paragraph 11.2.15).

Article 12, "Fisheries Research", in addition to underlining in general terms the relevance of a sound scientific basis for the conservation, management and utilization of fishery resources, also lists certain specific areas where research may produce desirable results.

These include studies on the selectivity of fishing gear, the environmental impact assessment of new types of gear prior to their introduction, and investigation and documentation of traditional fisheries knowledge and technologies, in particular those applied to small-scale fisheries.

The FAO Fisheries Department is actively promoting the widespread application of the Code. For this purpose, it has developed a comprehensive mid-term strategy in support of the implementation of the Code.

This is in line with the mandate received from the Conference at the time when the Code was adopted in 1995, requesting the Organization to make provision in its Programme of Work and Budget to:

- provide advice to developing countries in implementing the Code;
- elaborate an inter-regional programme for external assistance to support the implementation of the Code;
- elaborate technical guidelines in support of the implementation of the Code, and
- monitor and report on the Code's implementation.

The Conference also urged FAO to strengthen regional fishery bodies so that they might deal more effectively with fisheries conservation and management, the Code's primary objective.

The technical guidelines in support of the implementation of the Code so far published by the FAO Fisheries Department focus on fishing operations, the precautionary approach to capture fisheries and species introductions, integration of fisheries into coastal area management, fisheries man-

agement, and aquaculture development. Other technical guidelines are under preparation.

5.5 The Compliance Agreement³²

The Compliance Agreement is an integral component of the Code of Conduct for Responsible Fisheries. However, the Agreement, when it comes into force, will have a different legal status to that of the Code in that the Agreement will be a legally binding international instrument.

So far, 20 acceptances have been received. It will enter into force on the date of receipt by the Director-General of FAO of the twenty-fifth instrument of acceptance.

The Compliance Agreement provides an instrument for countries to deter the reflagging of vessels by their nationals as a means of avoiding compliance with applicable conservation and management rules for fishing activities on the high seas.

It seeks to ensure that there is effective flag State control over fishing vessels operating on the high seas. This would require, inter alia, that Parties to the Agreement maintain a register of vessels to fish on the high seas and that all vessels engaged in such fishing operations are authorized to do so.

Moreover, the Agreement requires that certain records concerning the physical characteristics of the vessels and their ownership and operational details be maintained by the Parties as part of their flag State responsibilities.

Furthermore, Parties are obligated to exchange information maintained on their respective registers through FAO and other appropriate global, regional and sub-regional fisheries management organizations.

Even though the Compliance Agreement has not yet entered into force, some of its elements are already being adopted by countries as their respective fisheries legislation is revised and other policy changes implemented concerning national authorizations for vessels to fish on the high seas.

FAO is continuing to promote the acceptance of the Agreement so that it might be brought into force with minimal delay.³³

³²This section is based on Doullman 1998. Op. Cit.

³³As part of the follow-up to the Compliance Agreement, FAO has continued to monitor reflagging. The number of vessels reflagged in the period 1994/1997 has increased to nearly 3 per cent of the fleet per year (vessels over 100 GT), however the vast majority of these have been normal transactions involving a change of ownership. Only about 15 per cent of the reflagging involve a change to a "flag of convenience". Nevertheless, the number of vessels flagged under open registers or "flags of convenience" has remained at around 5 per cent of the total fleet.

5.6 *The International Plans of Action (IPOAs)*³⁴

As the first priority, following the adoption of the important recent international agreements referred to above was in their effective and rapid implementation. COFI, at its 23rd session in 1999, adopted three international plans of action (IPOA) aiming at:

- reduction of incidental catch of seabirds in longline fisheries;
- conservation and management of sharks; and
- management of fishing capacity.

Subsequently, at its 24th session, COFI adopted the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing.

All four IPOAs are voluntary, have been elaborated within the framework of the Code of Conduct and call for greater regional and international co-operation with respect to research and development; situation assessments; exchange of relevant data and information through appropriate channels including regional fisheries management organizations (RFMOs) and through FAO; and education, training and public awareness creation. In applying the IPOAs, States are asked, where appropriate, to develop a national plan of action (NPOA). Similarly, RFMOs are requested to develop plans of action for their area of competence. As all the IPOAs and NPOAs are in furtherance of implementing the Code, reporting on their progress at international level has been made an integral part of countries' regular biennial reporting to FAO on their implementation of the Code of Conduct.

Greater details on the two most widely applicable, and perhaps most relevant IPOAs, are given below.

The IPOA on management of fishing capacity asks States, through NPOAs as well as RFMOs through regional plans, to achieve worldwide, preferably by 2003 but not later than 2005, an efficient, equitable and transparent management of fishing capacity (Paragraph 9 (ii)). Moreover, it requires, preliminary assessments of fishing capacity at the regional level within RFMOs, or in collaboration with them, and at the global level (in collaboration with FAO) in respect to transboundary, straddling, highly migratory and high-seas fisheries, as

well as the identification of regional or global fisheries and fleets requiring urgent measures (Paragraph 15). Among other urgent actions, it lists, *inter alia*, the following:

1. support to FAO in the organization of a technical consultation to be held as early as possible on the definition and measurement of fishing capacity (Paragraph 12);
2. the establishment of national, regional and international records of fishing vessels including of those fishing on the high seas as foreseen within the Compliance Agreement (Paragraphs 16-18);
3. as part of NPOAs, States should progressively eliminate all factors including subsidies and economic incentives and other factors which contribute directly or indirectly to the build-up of excessive fishing capacity (Paragraph 25);
4. States should recognize the need to deal with the problem of those States which do not fulfil their responsibilities under international law as flag States with respect to their fishing vessels and support multilateral co-operation to ensure that such flag States contribute to regional efforts to manage fishing capacity (Paragraph 33);
5. States should promote, with the assistance of FAO, the exchange of information about the fishing activity of fishing vessels that do not comply with conservation and management measures of RFMOs (Paragraph 35);
6. States should ensure that no transfer of capacity to the jurisdiction of another State should be carried out without the express consent and formal authorization of that State. (Paragraph 37);
7. States should, in compliance with their duties as flag States, avoid approving the transfer of vessels flying their flag to high seas areas where such transfers are inconsistent with responsible fishing under the Code of Conduct. (Paragraph 38).

The IPOA to prevent, deter and eliminate IUU fishing should be implemented by all States either

³⁴The full text of the IPOAs can be found on the FAO web site as follows: <http://www.fao.org/WAICENT/FAOINFO/FISHERY/ipa/ipae.asp>

directly, in co-operation with other States, or indirectly through relevant regional fisheries management organizations or through FAO and other appropriate international organizations. The full participation of stakeholders in combating IUU fishing, including industry, fishing communities, and non-governmental organizations, should be encouraged (Paragraph 9.1).

While the scope of the IPOA is broad and should address factors affecting all capture fisheries, the history of its origin clearly points to high-seas fisheries as its primary focus. In its submission to the 23rd Session of the FAO Committee on Fisheries (COFI) requesting the elaboration of an IPOA, the Government of Australia noted that IUU fishing took place mainly on the high seas, in contravention of management efforts by competent Regional Fisheries Management Organizations (RFMOs). The submission cited as an example the case of Patagonian toothfish, for which estimates indicated that up to 100,000 tonnes had entered international trade in 1996-97, around four times the legal catch level established by the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR).

The IPOA calls for a comprehensive and integrated approach, building on the primary responsibility of the flag State but using all available jurisdiction in accordance with international law, including port State measures, coastal State measures, market-related measures and measures to ensure that nationals do not support or engage in IUU fishing (Paragraph 9.3). The following lists some of the significant responsibilities and measures that States should take to prevent, deter and eliminate IUU fishing. Of particular interest is the inclusion of trade measures to attain compliance with internationally agreed upon fishery management and conservation rules.

5.6.1 All State responsibilities

All States should co-operate to identify those nationals who are the operators or beneficial owners of vessels involved in IUU fishing (Paragraph 18). States should, to the extent possible in their national law, avoid conferring economic support, including subsidies, to companies, vessels or persons that are involved in IUU fishing (Paragraph 23). States should discourage their nationals from flagging fishing vessels under the jurisdiction of a State that does not meet its flag State responsibilities (para 19). States should undertake comprehensive and effective monitoring, control and

surveillance (MCS) of fishing from its commencement, through the point of landing, to final destination (Paragraph 24).

5.6.2 Flag State responsibilities

A flag State should ensure, before it registers a fishing vessel, that it can exercise its responsibility to ensure that the vessel does not engage in IUU fishing (Paragraph 35). Flag States should avoid flagging vessels with a history of non-compliance, except under certain conditions (Paragraph 36.1)

Flag States should deter vessels from reflagging for the purposes of non-compliance with conservation and management measures (Paragraph 38) including denial to a vessel of an authorization to fish and the entitlement to fly that State's flag, to prevent "flag hopping" (Paragraph 39). Prior to allowing a vessel port access, States should require fishing vessels and vessels involved in fishing-related activities seeking permission to enter their ports to provide reasonable advance notice of their entry into port, a copy of their authorization to fish, details of their fishing trip and quantities of fish on board, with due regard to confidentiality requirements, in order to ascertain whether the vessel may have engaged in, or supported, IUU fishing (Paragraph 55).

5.6.3 Port State measures

Where a port State has clear evidence that a vessel having been granted access to its ports has engaged in IUU fishing activity, the port State should not allow the vessel to land or transship fish in its ports, and should report the matter to the flag State of the vessel (Paragraph 56). States should consider developing within relevant regional fisheries management organizations port State measures building on the presumption that fishing vessels entitled to fly the flag of States not parties to a regional fisheries management organization and which have not agreed to co-operate with that regional fisheries management organization, which are identified as being engaged in fishing activities in the area of that particular organization, may be engaging in IUU fishing (Paragraph 63).

5.6.4 Internationally agreed market-related measures

States should take all steps necessary, consistent with international law, to prevent fish caught by vessels identified by the relevant regional fisheries management organization to have been engaged in

IUU fishing being traded or imported into their territories.

Trade-related measures should only be used in exceptional circumstances, where other measures have proven unsuccessful to prevent, deter and eliminate IUU fishing, and only after prior consultation with interested States. Unilateral trade-related measures should be avoided (Paragraph 66). Trade-related measures to reduce or eliminate trade in fish and fish products derived from IUU fishing could include the adoption of multilateral catch documentation and certification requirements, as well as other appropriate multilaterally-agreed measures such as import and export controls or prohibitions (Paragraph 69).

States should take measures to ensure that their importers, transshippers, buyers, consumers, equipment suppliers, bankers, insurers, other services suppliers and the public are aware of the detrimental effects of doing business with vessels identified as engaged in IUU fishing... and should consider measures to deter such business (Paragraph 73). Similarly, States should take measures to ensure that their fishers are aware of the detrimental effects of doing business with importers, transshippers, buyers, consumers, equipment suppliers, bankers, insurers and other services suppliers identified as doing business with vessels identified as engaged in IUU fishing... (Paragraph 74).

There are several other provisions that aim at improving the information flow and exchange among countries, RFMOs and international organizations, in particular FAO, in order to establish the identity and level and nature of activities of vessels that engage in IUU fishing. Other provisions aim at improving the traceability of fish and fishery products from the place (or stock) of capture right through to its end use.

5.7 *Instruments relating to fish trade, subsidies and ecolabelling*

5.7.1 *Trade and environment*³⁵

The relation between trade, environment, and management has been a focus of international debate in recent years in the World Trade Organization (WTO), specifically in its Committee on Trade and Environment, as well as in various forums on fisheries and conservation. The debate has three

main components: (a) the impact that expanding trade, in the wake of liberalization, may generate on resources through incentives to increase extractive pressure; (b) the ways in which international WTO rules, as agreed upon in the Uruguay round, could be used to facilitate the effective implementation of multilateral environmental agreements (MEAs) and, hence, improve environmental and resources conservation; and (c) the modifications which might be needed in WTO rules, or in their interpretation or application, to achieve compatibility with MEAs.

The extent of trade liberalization of fish and fishery products as a consequence of tariff reductions agreed upon in the Uruguay round have been generally less than with other types of products. Nevertheless, fish trade has expanded dramatically during the last two decades reaching above US\$50 bn in 1998. The exports of mostly higher valued species by developing countries to northern markets has grown greatly in recent years and make a significant contribution to foreign exchange revenues. The aggregate net surplus of fish trade by developing countries is estimated at US \$17.6 bn in 1996.³⁶

Economic theory suggests that expanding fish trade and, hence, increasing demand and higher prices will provide incentives to individual fisheries entrepreneurs to increase their efforts to produce greater supplies.

However, as most conventional high-value resources are already fully or over-exploited, the increased effort may not translate into sustained higher catches and supplies but in further degradation of the high-value resource base and increased pressure on less intensely exploited stocks of lower value. Such pressure will also provide incentives to increase aquaculture of high-value (carnivorous) species and, as a consequence, may boost further the production of fishmeal. Therefore, in the absence of effective fisheries management, trade expansion might worsen the present state of resources.

5.7.2 *Subsidies*

One avenue towards better managed fisheries, which has received great international attention in recent times, is the phasing out of direct and

³⁵A recent comprehensive discussion of the relationship between trade and sustainable development in fisheries is provided by Deere, C. L. (2000). *Net Gains: Linking Fisheries Management, International Trade and Sustainable Development*. IUCN. Washington DC.

³⁶SOFIA 1998. op. cit.

indirect subsidies to marine capture fisheries³⁷. Such phasing out would amount to what has been called in trade and environment debates as a “win-win” policy; international trade would benefit from creating an equal playing field as competition-distorting subsidies are curbed, while the environment would benefit from reducing the economic incentive to overinvest and overharvest. This policy, however, will obviously make certain sections of people and entrepreneurs worse off than if these subsidies were to continue, at least in the short and medium term. Strong political opposition is, therefore, to be expected against policies that often would lead to bankrupting the more fragile fishery operators and, in some developing countries, further impoverishing artisanal fishing communities³⁸ in rural and peri-urban areas with little or no alternative sources of livelihood.³⁹

A usual argument, when the issue is debated in FAO, is that there are “good” as well as “bad” subsidies: good ones are those that help to improve fisheries management (for example, for decommissioning of excess fishing capacities), while bad ones are those that create incentives for excess capacity and overexploitation. It is notable that both trade expansion and bad subsidies create similar incentives for excess investments and that effective fisheries management could provide a solution in both instances. However, the competition-distorting effect of subsidies would still prevail.

Notable has been the call by the USA, Australia, Iceland, New Zealand and the Philippines, at the occasion of the WTO High-level Meeting on Trade and Environment, Geneva, 16-17 March 1999, that the new round of global trade negotiations should seek to eliminate harmful government fisheries subsidies. The agenda for these negotiations is likely to be set at the next WTO Ministerial Meeting, scheduled to take place in Doha, Qatar, 9-13 November 2001.

³⁷Further to earlier references, see in particular Schorr, David (1998). Towards Rational Disciplines on Subsidies to the Fishery Sector. A Call for New International Rules and Mechanisms. WWF-US. Washington.

³⁸It is notable, in this context, that the most powerful opposition might be coming from quarters of the shipbuilding industry and not from fisheries, which are not often well organized and politically forceful.

³⁹In an editorial in the journal *SAMUDRA Report*, December 1998, entitled “What price subsidies?”, Sebastian Mathew lists several reasons why there is often a legitimate need to continue, at least in the short term, with current subsidy schemes for small-scale labour intensive fisheries. *SAMUDRA Report* is published by the International Collective in Support of Fishworkers (ICSF), Chennai, India.

⁴⁰This section is largely based on the FAO Secretariat paper FI:EMF/98/2 Issues Related to the Feasibility and Practicability of Developing Globally Applicable, Non-discriminatory Technical Guidelines for Ecolabelling of Products from Marine Capture Fisheries produced for the FAO Technical Consultation on the Feasibility of Developing Non-discriminatory Guidelines for the Ecolabelling of Products from Marine Capture Fisheries, Rome, Italy, 21- 23 October 1998, the report of this consultation and on document FI:MM/99/3: What role for ecolabelling of fish and fishery production in support of responsible fisheries? prepared by the FAO Secretariat for the Ministerial Meeting on the Implementation of the Code of Conduct for Responsible Fisheries, Rome 10-11 March 1999.

⁴¹Paragraph 4.21 of Agenda 21.

5.7.3 Ecolabelling⁴⁰

Ecolabelling is a further approach to establish a higher congruence between trade and sustainability objectives, whose application to fisheries has recently got a lot of international attention. The potential usefulness of ecolabelling schemes to create market-based incentives for environmentally friendly products and production processes was internationally recognized at UNCED, where governments agreed to “encourage expansion of environmental labelling and other environmentally related product information programmes designed to assist consumers to make informed choices”⁴¹. Consumers are provided with the opportunity to express their environmental-ecological concerns through their choice of products. The consumers’ preferences are expected to result in price and/or market share differentials between ecolabelled products and those which either do not qualify to be ecolabelled or those whose producers do not seek to obtain such labelling. The label is obtained through a certification process based on a set of criteria (i.e. the desired standard). Potential price and/or market share differentials provide the economic incentive for firms to seek certification of their product(s).

In fisheries, there has been a rapid increase in ecolabelling initiatives in recent years. The first and most well known initiative in the field of marine capture fisheries has been the establishment of the Marine Stewardship Council (MSC), now an independent organization, by the World Wide Fund for Nature (WWF) and Unilever. While the number of marine fisheries currently covered is still very small, and the scheme’s expansion into the area of aquaculture is currently the subject of investigation, MSC has given the impetus for a range of subsequent initiatives. These include the following:

- an aquaculture ecolabelling scheme promoted by the Global Aquaculture Alliance, a

recently-formed NGO representing primarily firms with interests in shrimp aquaculture.

- as part of the activities of the Nordic Council (a permanent co-operation arrangement among the Scandinavian States), in mid-2000, a working group proposed the establishment of a voluntary, consumer-driven scheme for marine capture fisheries with State authorities establishing criteria, which can then be used by private bodies and NGOs to ecolabel products.
- the Marine Aquarium Council (MAC) assigns a label for aquarium fish. It brings together representatives of the aquarium industry, hobbyists, conservation organizations, government agencies and public aquariums. MAC aims at conserving coral reefs by creating standards and educating and certifying those engaged in the collection and care of ornamental marine life from reef to aquarium.
- at COFI 2001, Rome, February 2001, the Organization for Promotion of Responsible Tuna Fisheries (OPRT), a Japan-based and supported NGO bringing together the tuna industry, traders and others, announced the launching of a tuna ecolabelling pilot project focusing on products produced from longline fisheries for the Japanese *sashimi* market.

If applied to marine capture fisheries, the goal of ecolabelling would be to achieve certain specific fisheries management objectives. These objectives find expression in the criteria underlying certification standards.

The setting of fisheries management objectives and the establishment of the institutional and legal framework within which such objectives can be achieved (or not) are, in principle, the prerogatives of States, as clearly established in the UN 1982 Convention and the other international instruments discussed above.

These instruments, however, establish also principles and objectives for conservation and management of marine fisheries resources, which are referred to by the tenants of ecolabelling, together with poor performance of conventional fishery management, to justify their initiatives.

During the 1997 and 1999 sessions of COFI and the 1998 session of the COFI Sub-committee on Fish Trade, a large majority of governments recognized the potential positive role of consumer choice but expressed concern about the MSC initiative. While many governments criticized the initiative for having failed to consult adequately with governments, industry, fishworkers and other interest groups, developing countries have voiced concern that ecolabelling schemes could create new barriers to trade, especially for their products and those produced by small-scale fisheries.

The question of whether, and how, the GATT Technical Agreement on Barriers to Trade (TBT) applies to ecolabelling programmes has been discussed in WTO's Committee on Trade and Environment (CTE) in 1996. One of the main issues of contention is the applicability of the TBT agreement to so-called non-product-related production methods and processes (PPMs). The report notes that "[M]any delegations expressed the view that the negotiating history of the TBT Agreement indicates clearly that there was no intention of legitimizing the use of measures based on non-product-related PPMs under the TBT Agreement, and that voluntary standards based on such PPMs are inconsistent with the provisions of the Agreement as well as with other provisions of the GATT."

As ecolabelling schemes in marine capture fisheries would commonly encompass criteria and standards for non-product-related PPMs, one may conclude that there exists a discrepancy between the mandate given by Agenda 21 and the GATT TBT or, at least, its interpretation by many governments. However, notable is the ruling of a GATT arbitration panel from which one may infer that voluntary ecolabelling schemes are not, in principle, in contravention of existing WTO trade rules, irrespective of their coverage of production process and methods (PPMs), which are unrelated to a product's characteristics.⁴²

Whatever the scheme, the basic WTO principle of non-discrimination needs to be respected, and labelling requirements and practices should not discriminate—either between trading partners (most-favoured nation treatment should apply), or between domestically-produced goods or services and imports (national treatment).⁴³

⁴²In its ruling on the GATT-illegality of import restrictions adopted by the United States of America on tuna caught in association with dolphin, a GATT arbitration panel upheld the US voluntary "dolphin safe" tuna labelling scheme because any competitive advantage conferred by the label depended on the free choice by consumers to give preference to tuna carrying the "dolphin safe" label. The panel argued that "[T]he labelling provisions did not make the right to sell tuna or tuna products, nor the access to a government-conferred advantage affecting the sale of tuna or tuna products, conditional upon the use of tuna harvesting methods." (General Agreement on Tariffs and Trade. 1991. United States -Restrictions on Imports of Tuna. GATT-Documents. DS21/R. Geneva.)

⁴³See WTO's web site for details. (www.wto.org).

5.8 Provisions of Regional Fisheries Management Organizations (RFMOs)

All the recent international instruments relating to marine fisheries presented above stress, in particular, the important role of RFMOs in fisheries management. This appears to be in contrast with their overall achievement, as reflected by the poor state of many marine fisheries resources. There are over 30 RFMOs operating worldwide, nine of which were established under the FAO Constitution and 24 under international agreements between three or more contracting parties. Their mandates, membership and participation, decision-making procedures, modes of operation and outcomes have been subject of discussion in a recent meeting convened by FAO in Rome, 11-12 February 1999. In background documents made available to the participants, the FAO Secretariat noted, among the factors hindering progress in the effectiveness of RFMOs the failure by some States to accept and implement relevant international instruments, a lack of willingness by some States to delegate sufficient responsibility to regional bodies and the lack of enforcement of management measures at both national and regional level.

Fisheries management decision-making is very complex because it is not simply a technical process but involves the taking of decisions on the regulation of access and allocation of resources (with significant impact on wealth distribution and livelihoods), as well as the enforcement of regulations. Others have international implications such as monitoring, control and surveillance (MCS) of transboundary stocks or those stocks that are adjacent to national jurisdictions. At the regional level, such decisions have profound political implications and touch upon national sovereignty, explaining the reluctance of member States to delegate any supra-national responsibilities to such simple administrative mechanisms. The tendency of many RFMOs to take decisions by consensus leads to decisions on a minimum- common denominator and the "too little, too late" syndrome stressed by many analysts in the last two decades.

5.8.1 Indian Ocean Tuna Commission (IOTC)

IOTC is probably the most important RFMO in the Indian Ocean Region. It was established under Article XIV of the FAO Constitution and the Agreement entered into force in March 1996. Membership is open for both coastal States and non-coastal States whose vessels exploit species covered by the

Agreement in the Indian Ocean, essentially tuna and tuna-like species. The main objectives, functions and responsibilities of the Commission include the following:

1. promote co-operation among its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks covered by this Agreement and encouraging sustainable development of fisheries based on such stocks;
2. keep under review the conditions and trends of the stocks and to gather, analyze and disseminate scientific information, catch and effort statistics and other data relevant to the conservation and management of the stocks and to fisheries;
3. encourage, recommend, and co-ordinate research and development activities in respect of the stocks and fisheries covered by this Agreement...having due regard to the need to ensure the equitable participation of Members of the Commission in the fisheries and the special interests and needs of Members in the region that are developing countries;
4. adopt, on the basis of scientific evidence, conservation and management measures, to ensure the conservation of the stocks covered by this Agreement and to promote the objective of their optimum utilization throughout the Area;
5. keep under review the economic and social aspects of the fisheries based on the stocks covered by this Agreement, bearing in mind, in particular, the interests of developing coastal States.

The Commission has the power to adopt, by a two-third majority, management measures that are binding on its Members. Since its inception, IOTC has established several working parties to fulfil its mandate including on data collection and statistics, tropical tunas, and on tagging. In a series of resolutions adopted at past sessions, IOTC seeks to improve its information base on tuna catches and the status of tuna stocks and the number and activities of tuna fishing vessels, including those by flag-of-convenience vessels in the Indian Ocean region. It also actively seeks to prevent, deter and eliminate IUU fishing through measures such as the refusal by contracting and non-contracting parties the landing and transshipment of tuna catches by FoC vessels, to inform their general public not to purchase tuna

harvested by such vessels, and urges their manufacturers and other concerned business people to prevent their vessels and equipment being used for FoC longline fisheries.

One area of critical importance that does not yet form part of the Agreement is a control and inspection scheme. In a resolution (99/03), IOTC resolves to establish the adoption of a scheme at its session in 2001, based on earlier proposals made with regard to the details of such a scheme at its intersessional meeting in Yaizu, Japan, in March 2001.⁴⁴

5.8.2 *The Commission for the Conservation of Southern Bluefin Tuna (CCSBT)*

CCSBT members comprise Australia, Japan and New Zealand and its convention came into force in May 1994.⁴⁵

CCSBT's main objective is to ensure, through appropriate management, the conservation and optimum utilization of southern bluefin tuna. It has previously set a global TAC, but not since 1997, since when individual countries have voluntarily restricted to commercial catch levels in 1997. CCSBT has too endorsed guidelines for certain types of fishing gear to reduce incidental mortalities of sea birds (especially albatross).

Individual countries have imposed restrictions of their own vessels to avoid fishing in breeding grounds and taking juvenile fish. Each country undertakes its own data collection and monitoring programmes. CCSBT recently agreed to develop a scientific research programme to seek to reduce uncertainties in stock assessment.

A dispute among the parties of CCSBT has resulted in one of the few fisheries cases being brought before the International Tribunal for the Law of the Sea. Australia and New Zealand asked the Tribunal in 1999 for an injunction to prevent Japan to continue its three-year experimental fishery for southern bluefin tuna, with the aim of improving stock assessment. In August 1999, the Tribunal issued an Order in which it decided that Australia, Japan and New Zealand should refrain from conducting an experimental fishing programme, unless agreed among the Parties and unless the catch is counted against the national quotas.⁴⁶

⁴⁴Further details can be obtained from IOTC's website: www.seychelles.net/iotc/

⁴⁵Southern bluefin tuna is also exploited by vessels from Indonesia, South Korea and Taiwan (Province of China).

⁴⁶For details on this case, the reader may consult the following: Maguire, J.J. 2000. Southern Bluefin Tuna dispute. In, Nordquist, M.H. and J. N. Moore (eds.). 2000. Current Fisheries Issues and the Food and Agriculture Organization of the United Nations. Martinus Nijhoff Publishers. The Hague/Boston/London. pp. 201-224. Wolfrum, R. 2000. The role of the International Tribunal for the Law of the Sea. In Nordquist, M.H. and J. N. Moore (eds.). op. cit. pp. 369-385.

5.8.3 *Western Indian Ocean Tuna Organization (WIOTO)*

The membership of WIOTO is entirely confined, in accordance with its convention that entered into force in 1994, to coastal countries whose territory is principally in the western Indian Ocean Region. Its current membership comprise Comoros, India, Mauritius and Seychelles. WIOTO has no regulatory powers but aims at increased co-operation and co-ordination on matters concerning:

- harmonization of policies with respect to fisheries;
- relations with distant-water fishing nations;
- fisheries surveillance and enforcement;
- fisheries development; and
- reciprocal access to EEZs of other members.

With the formation of IOTC, the activities of WIOTO appear to have largely ceased.

5.8.4 *Southwest Indian Ocean Fisheries Commission (SWIOFC)*

Two intergovernmental consultations have taken place in 2001 on the establishment of SWIOFC in order to obtain agreement on the objectives, structure and area of competence of this envisaged RFMO. As IOTC covers tuna and tuna-like species, it is self-evident that SWIOFC would address the management and conservation of non-tuna species. Open areas for further negotiations relate to whether its objectives should encompass fisheries development concerns in addition to those of conservation and management, its geographical area of competence, and if the Commission should be established under the constitution of FAO or as an independent organization.

5.9 *The Global Plan of Action for the Protection of the Marine Environment (GPA)*

The GPA was adopted in November 1995 by the Intergovernmental Conference to Adopt a Global Programme of Action for the Protection of the Marine

Environment from Land-based Activities (Washington, October-November, 1995). The GPA is intended to address the fact that about 80 per cent of all marine pollution is caused by human activities on land leading to disposal in rivers and the coastal ecosystem of: urban and other sewage; inadequately treated waters from industries; discharges of nutrients of phosphorus and nitrogen used in agriculture, and finally, concentrations of heavy metals and persistent organic pollutants.

The GPA aims at preventing the degradation of the marine environment from land-based activities by facilitating the realization of the duty of States to preserve and protect the marine environment. More specifically, the GPA aims at identification and assessment of problems, identifying the nature and severity of problems caused by marine pollution on food security and poverty alleviation; public health; ecosystem health and biological diversity; and economic and social benefits and uses. It should also help assessing the severity and impacts of contaminants as well as the physical alteration, destruction, or otherwise of ocean habitats, and identify the point and non-point sources of pollution. Finally, it should also help identifying critical areas that are affected or particularly vulnerable, such as coastal watersheds, shorelines, estuaries and their drainage basins, and habitats of endangered species.

A wide range of actions, mainly at national level, are foreseen under the GPA including:

- adaptation or development of regional and national action programmes;
- regional and global assessments on the impact of land-based activities on the marine, coastal and associated freshwater environment;
- organization and operation of a clearing-house, prepared to respond to requests for assistance;
- mobilization of financial resources; and
- awareness building.

There are several action plans in the Indian Ocean Region of UNEP's Regional Seas Programme that address marine pollution and integrated coastal zone management, including those for eastern Africa and southern and eastern Asia.⁴⁷

⁴⁷For details, see UNEP's web site at: www.unep.ch/seas/rshome.html

5.10 The Convention on Biological Diversity (CBD)

Since UNCED, there has been a growing recognition that biological diversity is a global asset of tremendous value. The initiative that led to the establishment of the Convention on Biological Diversity (CBD) started in UNEP in 1988. The Convention was opened for signature on 5 June 1992 at UNCED and entered into force on 29 December 1993. Inspired by the world community's growing commitment to sustainability, the CBD represents an important step forward in the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources through *in situ* and *ex situ* conservation. It has, therefore, an obvious impact on the global regulatory context in which fisheries operate and on the way fisheries will be perceived in the global environmental arena.

Following the establishment of the CBD, the FAO Commission on Genetic for Food and Agriculture (previously only concerned with plants) has broadened its mandate to cover also aquatic resources, and linkages between the CBD and the Code of Conduct requirements are considered in FAO in that ambit.

The "Jakarta Mandate on Marine and Coastal Biological Diversity" (CBD-JM), adopted by the Conference of the Parties of the CBD in 1995, provides a new global consensus on the importance of marine and coastal biological diversity, and reaffirms the critical need to address the conservation and sustainable use of marine and coastal biological diversity. Within the CBD-JM, five thematic issues have been identified: integrated marine and coastal area management; marine and coastal protected areas; sustainable use of marine and coastal living resources; mariculture and alien species.

From a species-diversity point of view, coral reefs are probably among the most valuable marine habitats. They are essential to fisheries production in most small island countries and are in serious decline globally, as well as in the Indian Ocean Region. The International Coral Reef Initiative (ICRI) promotes the protection and restoration of reef environments through national development and management plans, capacity building, better research and monitoring. Its support in the Indian

Ocean Region includes mapping through GIS, status assessments, establishment of marine protected areas and integrated coastal area management.⁴⁸

6 Conclusion

Significant progress has been made during the last half century in binding international legal instruments and voluntary codes and plans of actions and initiatives to improve the management of fisheries and protect the marine and coastal environment. As with all legal instruments and codes, domestic or international, their ultimate effect depends on their enforcement by the State and voluntary adherence by individuals and public and private organizations. Both enforcement by the State and voluntary adherence will be furthered by people becoming aware of the contents of these agreements and acting on it individually and in associations.

Considering the still very low average per capita incomes in many of the coastal countries of the Indian Ocean Region and the daunting human, technological and financial resources required for improved management of the marine environment and fisheries, it is obvious that much greater resources have to be made available for these tasks by the international community. A special responsibility in this regard appears to fall on those countries that, in the past and present, have been among the major beneficiaries of the natural resources abundance in the Indian Ocean Region. Having said that, one should hasten to add that much could be achieved in terms of improved fisheries management and the conservation of the marine environment by coastal countries themselves adopting better policies and regulatory frameworks.

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Annex 1 Convention on the Law of the Sea—Overview⁵⁰

The United Nations Convention on the Law of the Sea (full text) comprises 320 articles and nine annexes, governing all aspects of ocean space, such as delimitation, environmental control, marine scientific research, economic and commercial activities, transfer of technology and the settlement of disputes relating to ocean matters.

The Convention entered into force in accordance with its article 308 on 16 November 1994, 12 months after the date of deposit of the sixtieth instrument of ratification or accession.

Some of the key features of the Convention are the following:

- Coastal States exercise sovereignty over their territorial sea which they have the right to establish its breadth up to a limit not to exceed 12 nautical miles; foreign vessels are allowed “innocent passage” through those waters;
- Ships and aircraft of all countries are allowed “transit passage” through straits used for international navigation; States bordering the straits can regulate navigational and other aspects of passage;
- Archipelagic States, made up of a group or groups of closely related islands and interconnecting waters, have sovereignty over a sea area enclosed by straight lines drawn between the outermost points of the islands; all other States enjoy the right of archipelagic passage through such designated sea lanes;
- Coastal States have sovereign rights in a 200-nautical mile exclusive economic zone (EEZ) with respect to natural resources and certain economic activities, and exercise jurisdiction over marine science research and environmental protection;
- All other States have freedom of navigation and overflight in the EEZ, as well as freedom to lay submarine cables and pipelines;
- Land-locked and geographically disadvantaged States have the right to participate on an equitable basis in exploitation of an appropriate part of the surplus of the living resources of the EEZ’s of coastal States of the same region or subregion; highly migratory species of fish and marine mammals are accorded special protection;
- Coastal States have sovereign rights over the continental shelf (the national area of the seabed) for exploring and exploiting it; the shelf can extend at least 200 nautical miles from the shore, and more under specified circumstances;
- Coastal States share with the international community part of the revenue derived from exploiting resources from any part of their shelf beyond 200 miles;
- The Commission on the Limits of the Continental Shelf shall make recommendations to States on the shelf’s outer boundaries when it extends beyond 200 miles;
- All States enjoy the traditional freedoms of navigation, overflight, scientific research and fishing on the high seas; they are obliged to adopt, or cooperate with other States in adopting, measures to manage and conserve living resources;
- The limits of the territorial sea, the exclusive economic zone and continental shelf of islands are determined in accordance with rules applicable to land territory, but rocks which could not sustain human habitation or economic life of their own would have no economic zone or continental shelf;
- States bordering enclosed or semi- enclosed seas are expected to cooperate in managing living resources, environmental and research policies and activities;
- Land-locked States have the right of access to and from the sea and enjoy freedom of transit through the territory of transit States;
- States are bound to prevent and control marine pollution and are liable for damage caused by violation of their international obligations to combat such pollution;
- All marine scientific research in the EEZ and on the continental shelf is subject to the consent of the coastal State, but in most cases they are obliged to grant consent to other States when the research is to be conducted

⁵⁰This overview is taken verbatim from the following Internet site: <http://www.un.org/Depts/los/losconv2.htm>

for peaceful purposes and fulfils specified criteria;

- States are bound to promote the development and transfer of marine technology “on fair and reasonable terms and conditions”, with proper regard for all legitimate interests;
- States Parties are obliged to settle by peaceful means their disputes concerning the interpretation or application of the Convention;
- Disputes can be submitted to the International Tribunal for the Law of the Sea established under the Convention, to the International Court of Justice, or to arbitration. Conciliation is also available and, in certain circumstances, submission to it would be compulsory. The Tribunal has exclusive jurisdiction over deep seabed mining disputes.

Annex 2
**Text of selected Articles
of the 1982 United Nations Convention
on the Law of the Sea**

Article 61

Conservation of the living resources

1. The coastal State shall determine the allowable catch of the living resources in its exclusive economic zone.
2. The coastal State, taking into account the best scientific evidence available to it, shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by overexploitation. As appropriate, the coastal State and competent international organizations, whether subregional, regional or global, shall co-operate to this end.
3. Such measures shall also be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global.
4. In taking such measures the coastal State shall take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened.
5. Available scientific information, catch and fishing effort statistics, and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis through competent international organizations, whether subregional, regional or global, where appropriate and with participation by all States concerned, including States whose nationals are allowed to fish in the exclusive economic zone.

Article 62

Utilization of the living resources

1. The coastal State shall promote the objective of optimum utilization of the living resources in the exclusive economic zone without prejudice to article 61.
2. The coastal State shall determine its capacity to harvest the living resources of the exclusive economic zone. Where the coastal State does not have the capacity to harvest the entire allowable catch, it shall, through agreements or other arrangements and pursuant to the terms, conditions, laws and regulations referred to in paragraph 4, give other States access to the surplus of the allowable catch, having particular regard to the provisions of articles 69 and 70, especially in relation to the developing States mentioned therein.
3. In giving access to other States to its exclusive economic zone under this article, the coastal State shall take into account all relevant factors, including, inter alia, the significance of the living resources of the area to the economy of the coastal State concerned and its other national interests, the provisions of articles 69 and 70, the requirements of developing States in the subregion or region in harvesting part of the surplus and the need to minimize economic dislocation in States whose nationals have habitually fished in the zone or which have made substantial efforts in research and identification of stocks.
4. Nationals of other States fishing in the exclusive economic zone shall comply with the conservation measures and with the other terms and conditions established in the laws and regulations of the coastal State. These laws and regulations shall be consistent with this Convention and may relate, inter alia, to the following:

- (a) licensing of fishermen, fishing vessels and equipment, including payment of fees and other forms of remuneration, which, in the case of developing coastal States, may consist of adequate compensation in the field of financing, equipment and technology relating to the fishing industry;
 - (b) determining the species which may be caught, and fixing quotas of catch, whether in relation to particular stocks or groups of stocks or catch per vessel over a period of time or to the catch by nationals of any State during a specified period;
 - (c) regulating seasons and areas of fishing, the types, sizes and amount of gear, and the types, sizes and number of fishing vessels that may be used;
 - (d) fixing the age and size of fish and other species that may be caught;
 - (e) specifying information required of fishing vessels, including catch and effort statistics and vessel position reports;
 - (f) requiring, under the authorization and control of the coastal State, the conduct of specified fisheries research programmes and regulating the conduct of such research, including the sampling of catches, disposition of samples and reporting of associated scientific data;
 - (g) the placing of observers or trainees on board such vessels by the coastal State;
 - (h) the landing of all or any part of the catch by such vessels in the ports of the coastal State;
 - (i) terms and conditions relating to joint ventures or other co-operative arrangements;
 - (j) requirements for the training of personnel and the transfer of fisheries technology, including enhancement of the coastal State's capability of undertaking fisheries research;
 - (k) enforcement procedures.
5. Coastal States shall give due notice of conservation and management laws and regulations.

Annex 3

Summary of the main contents of the 27 principles of the Rio Declaration on Environment and Development

- Principle (P) 1 places human beings at the centre of concerns for sustainable development.
- P 2 asserts the sovereignty of States to exploit their own resources according to their policy objectives but places on them the obligation to cause no damage to the environment of other States beyond the limits of national jurisdiction.
- P 3 States the right to development and P 4 demands that environment protection forms an integral part of development.
- P 5 calls on States and all people to collaborate in the eradication of poverty and P 6 demands that special priority be given to developing countries, particularly the least developed and most environmentally vulnerable.
- P 7 calls on States to co-operate in environment conservation and acknowledges the special responsibility borne by developed countries because of their burden on the global environment and the technological and financial resources they command.
- P 8 asks States to reduce and eliminate unsustainable patterns of production, consumption and to promote appropriate demographic policies.
- P 9 promotes international co-operation in capacity-building and knowledge and technology transfer.
- P 10 promotes broad-based participation in decision-making, the free flow of information and access to the judicial and administrative proceedings.
- P 11 calls on States to enact effective environmental legislation.
- P 12 asks States to promote a supportive and open international economic system and refrain from using environmental measures as arbitrary barriers to trade.
- P 13 requires States to develop national law and to co-operate in the development of international law regarding liability and compensation of victims of pollution and environmental harm.
- P 14 calls on States to discourage the transfer to other States of substances that cause serious harm.
- P15 requires States to widely apply the precautionary approach, i.e. the lack of full scientific certainty shall not be used to postpone cost-effective measures to prevent serious or irreversible environmental damage.
- P 16 calls on national authorities to promote the internalisation of environmental costs, i.e. the polluter should bear the cost of pollution.
- P 17 requests the undertaking of environmental impact assessments for proposed activities that are likely to have significant environmental impacts.
- P 18 and P 19 commit States to give early notification of emergencies, disasters, etc. and of other activities resulting in transboundary environmental impacts and call on the international community to help States afflicted by disasters and emergencies.
- P 20 urges the full participation by women in environmental management and development.
- P 21 asks that youth be mobilized to forge a global partnership.
- P 22 requires States to recognize and duly support the identity, culture and interests of indigenous people and enable their effective participation in achieving sustainable development.
- P 23 requires the protection of the environment and natural resources of people under oppression, domination and occupation.
- P 24 calls on States to protect the environment in times of armed conflicts.
- P 25 recognizes the interdependence and indivisibility of peace, development and environmental protection.

- P 26 commits States to resolve all environmental disputes peacefully and P 27 requires all States and people to co-operate in good

faith and in a spirit of partnership in the fulfilment of the principles of this declaration.

Annex 4

Summary of the main provisions of the 1995 Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA)

GPA identifies nine source categories and sets specific objectives and targets to be met by States within given time frames. With regards to sewage, States are expected to establish by the year 2000 waste treatment and disposal quality criteria, objectives and standards based on the nature and assimilative capacity of the receiving environment. By the year 2025, all sewage, waste waters and solid wastes should be disposed of in conformity with national and international environmental quality guidelines.

Emissions and discharges of persistent organic pollutants should be reduced or eliminated, giving immediate attention to the identification and introduction of substitutes for such substances. Cleaner production processes are to be introduced to reduce or eliminate hazardous by-products and wastes associated with production, incineration and combustion, e.g. dioxins, furans, hexachlorobenzene and polycyclic aromatic hydrocarbons. Further, best environmental practice for pest control in agriculture and aquaculture should be promoted.

A further objective is to reduce or eliminate emissions and discharges of radioactive sub-

stances, of heavy metals, and of oil (hydrocarbons), in order to prevent, reduce and eliminate pollution of the marine and coastal environment.

Another source category are nutrients. The objective of the Action Programme is to identify marine areas where nutrient inputs are causing or are likely to cause pollution, to reduce nutrient inputs into the areas identified and to reduce the number of marine areas where eutrophication is evident. This is an area of particular interest since agricultural practices are a source of nutrient enrichment of coastal waters. Agricultural activities and deforestation contribute also to another category affecting the marine environment: sediment mobilization.

Litter threatens marine life through entanglement, suffocation and ingestion and is widely recognized to degrade the visual amenities of marine and coastal areas. The target is that by the year 2025 States should provide all urban areas with adequate waste collection, disposal and treatment services.

The SADC Marine Fisheries and Resources Sector Co-ordinating Unit

SADC Secretariat

Abstract

The Marine Fisheries and Resources Sector Co-ordinating Unit of the Southern African Development Community (SADC) aims to co-ordinate promotional efforts in the food, agriculture and natural resources sector. Its activities include monitoring, control and surveillance, maintaining a regional fisheries information system and the Benguela Environment Fisheries Interaction and Training programme (BENEFIT) to enhance the science capability required for optimal and sustainable utilization of marine living resources.

Keywords

South Africa. Namibia. SADC. Monitoring, control and surveillance (MCS). Regional fisheries information system. Benguela. BENEFIT project.

1 Introduction

The marine fisheries and resources sector is co-ordinated by the Republic of Namibia, following a Southern African Development Community (SADC) Council of Ministers' decision in 1991. The Permanent Secretary of the Ministry of Fisheries and Marine Resources (MFMR) of Namibia leads and chairs the meetings of SADC marine fisheries senior officials, while the Minister of Fisheries and Marine Resources of Namibia chairs the SADC Sectoral Committee of Ministers of Fisheries.

The Sector Contact Points, through which the Sector Co-ordinating Unit (SCU) is co-operating at the grassroots level, are designated for each of the eight coastal Member States.

The SCU is subjected to co-ordination by the Food, Agriculture and Natural Resources (FANR) within SADC.

The policy objectives of the SADC marine fisheries and resources sector are based on the FANR overall policy objectives, which are to:

- raise production, and improve processing methods, marketing and distribution of fish and fish products;
- protect and enhance marine and coastal environments, control pollution and avoid harmful effects on other natural resources;

- provide training and assistance to promote profitable operations at all levels from artisanal to industrial;
- strengthen and develop small-scale and artisanal fisheries and the economies of coastal fishing communities in an integrated and sustainable manner, and fully involve the people in development programmes and in decision-making processes; and
- base all development projects for the marine fisheries sector on sound, scientific analysis of resources and their sustainability, educate fisherfolk and coastal people at all levels in environmental and resource awareness and involve them in management systems and decisionmaking.

2 Mandates of the SCU

The SCU is responsible for both promoting and co-ordinating the functions of the sector. There are different functions.

Some of the co-ordinating functions are to:

- organize, where appropriate, sectoral ministers' committee meetings to assess and approve new policies and projects;

- give sectoral contact points guidance on project cycle management and periodically evaluate their performance, as part of the progress report;
- assess project proposal from member States, using the approved selection criteria to ensure that the project confers greater benefits to the region;
- mobilize resources for the implementation of the sector's programmes and projects;
- co-ordinate the implementation of programme/projects by both public and private national agencies, with the assistance of sectoral contact points;
- organize, where necessary, donor conferences for mobilization of funds for major programmes and follow-up on the consequent pledged support;
- represent and present the SCU at workshops, meetings and seminars; and
- liaise with other sectors in the implementation of projects that require a joint approach.

Promotional functions are to:

- provide essential regional leadership in the development of the sector;
- generate donor interests in the sector's programme of action and follow up these interests with the view to make them concrete pledges of support;
- assist sectoral contact points in identifying projects with greater regional benefits; and
- project the role of the sector within the regional economy on the basis of consultation with sectoral contact points.

3 Activities of the SCU

The activities of the SCU include monitoring of the implementation of programmes and projects of the

sector in the region. Below are some of the projects that are currently being implemented and managed by the SCU:

- *Monitoring, Control and Surveillance (MCS)*

The main objective of this project is the improvement of fisheries resources. The project aims to improve the national institutional capacity for efficient, cost-effective and sustainable MCS and to establish and enhance effective regional co-operation on SADC and fisheries management.

Activities include, *inter alia*, training of fisheries staff, designing and operating effective MCS operational systems, cost control and monitoring of MCS effectiveness.

- *Regional Fisheries Information System (RFIS)*

The objective of the project is to improve the sustainable utilization of SADC's fisheries resources to contribute to the national economies, development objectives and sustainable livelihood of coastal communities. Its purpose is to provide timely, relevant, accessible, usable and cost-effective information to improve the management of the marine fisheries resources in the region.

The activities undertaken include building artisanal fisheries decision support systems, giving support to regional marine fisheries environmental information systems for the Benguela Current region, and support fisheries information management systems for other regional organizations to promote the sustainable exploitation of shared marine resources.

- *Benguela Environment Fisheries Interaction and Training Programme (BENEFIT)*

The BENEFIT project aims at developing the enhanced scientific capability required for optimal and sustainable utilization of marine living resources.

Crossing Maritime Borders: The Problem and Solution in the Indo-Sri Lankan context

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Abstract

The number of incidents of firing at Indian fishing boats in the Palk Bay by the Sri Lankan Navy and the consequent loss of lives has been a serious issue in Tamil Nadu, India for the past many years. An equally important issue associated with this has been the arrest of Indian fishermen at sea and their subsequent detention in jails by the Sri Lankan authorities. At times, the resentment of the fisherfolk of Rameswaram and neighbouring villages in Tamil Nadu has boiled over, leading to demonstrations and even violent protests. Less publicized in India has been the regular arrest and detention of Sri Lankan fishermen by the Indian authorities for crossing the maritime border. However, this is an important issue in Sri Lanka itself and many fisherfolk organizations and non-governmental organizations (NGOs) from that country have been contacting NGOs and fisherfolk organizations in India to seek help in the release of arrested Sri Lankan fishermen.

The problem of fishermen crossing borders is a serious one on the Indo-Sri Lankan maritime border. It has led to great deal of suffering among the fisherfolk of both countries. Both governments are treating the problem without acknowledging the real causes behind it. The problems need to be squarely faced and creative solutions found so that national interests as well as fishermen's livelihoods are protected.

Keywords

India. Sri Lanka. Indo-Sri Lanka maritime boundary. Maritime border. Historic waters. International boundary line. Territorial waters. Territorial sea. Exclusive economic zone. Border crossing. Equidistance. Palk Bay. Tamil Nadu. Rameswaram. Gulf of Mannar. Mandapam. Adam's Bridge. Kachchativu. Maritime Zones of India (MZI) Act. Alliance for Release of Innocent Fishermen (ARIF). Forum for Human Dignity. World Forum of Fishworkers.

1 Introduction

1.1 The problem

The number of incidents of firing at Indian fishing boats in the Palk Bay by the Sri Lankan Navy and the consequent loss of lives has been a serious issue in Tamil Nadu for the last many years. An equally important issue associated with this has been the arrest of Indian fishermen at sea and their subsequent detention in jails by the Sri Lankan authorities. At times, the resentment of the fisherfolk of Rameswaram and neighbouring villages has boiled over, leading to demonstrations and even violent protests. Less publicized in India has been the

regular arrest and detention of Sri Lankan fishermen by the Indian authorities for crossing the maritime border. However, this is an important issue in Sri Lanka itself and many fisherfolk organizations and NGOs from that country have been contacting NGOs and fisherfolk organizations in India to seek help in the release of arrested Sri Lankan fishermen.

2 Historical Evolution of the Problem

India and Sri Lanka share a long and common history, with considerable interaction between the coastal communities of both nations. However, to

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understand the historical evolution of the particular problem at hand, a quick look at the geographical aspects is vital.

2.1 *The geographical aspects*

The island nation of Sri Lanka lies off the south-east coast of India, with the northern part of the island being at the same latitude as the southern part of Tamil Nadu, India's southernmost State. The maritime boundary between the two countries were settled through two Agreements in 1974 and 1976, even before the Law of the Sea was negotiated at the United Nations, and India declared its 200-nautical mile exclusive economic zone (EEZ). The Indo-Sri Lanka maritime boundary cuts through three different seas: the Bay of Bengal in the north, the Palk Bay in the centre, and the Gulf of Mannar (which opens to the Indian Ocean) in the south. The 1974 Agreement between Indira Gandhi and Srimavo Bandaranaike, the then Prime Ministers of the two countries, was for the Palk Bay, which was termed as the 'historic waters'. The 1976 Agreement was for the Bay of Bengal and the Gulf of Mannar.

The maritime boundary (or International Boundary Line or IBL as it is called by the coast-guard and navy) is uncomfortably close to the shores of both countries in the Palk Bay, where the maximum distance between the two countries is only around 45 km, and the minimum is just 16 km between Dhanushkodi on the Indian coast and Thalaimannar on the Sri Lankan coast. A crossing of the IBL would imply entry into the territorial waters (12 nautical miles or 22 km) rather than the EEZ. The distances between the Indian coast and the Sri Lanka coast are much longer in the Bay of Bengal and the Gulf of Mannar. As far as the Gulf of Mannar is concerned, except for a few of the centres like Mandapam, south of Rameswaram, the distances are considerable. As far as the Bay of Bengal is concerned, except for centres close to Pt. Calimere (Kodikarai), the distances to Sri Lanka are quite considerable.

Some remarks about the Palk Bay are warranted at this point. The bay is a shallow system with the depth not increasing beyond 50 m at any point. The southern end of the bay is narrow and the so-called Adam's Bridge that connects Dhanushkodi and Thalaimannar acts as a barrier to the Gulf of Mannar. This ridge between Dhanushkodi and Thalaimannar makes it difficult for larger vessels to cross over from the Bay to the Gulf and vice versa. This makes the Palk Bay a distinctly differ-

ent ecosystem and the fish resources and stocks are different from that of the Gulf.

2.2 *Historic contacts*

The fishermen communities on either side of the Palk Bay are Tamil-speaking and have common origins. Further, the Bay is a common fishing ground for fishermen of both countries. It is, therefore, not surprising that there has been close contact between the fishermen of both countries for centuries. There has also been a free movement of goods across the bay before independence, which did not completely stop after independence. During the colonial period, both countries were under the administration of the British, and this ensured that the free intercourse that existed prior to colonization was not disrupted. The coming of independence and the creation of two modern nation States did not alter the picture substantially as far as the coastal fishermen were concerned. The free movement of men and material continued across the Palk Bay. The two events that affected this and progressively led to the current situation were the 1974 Agreement between India and Sri Lanka on the maritime border in the Palk Bay and the start of the civil war in Sri Lanka in 1983.

2.3 *The pre-1974 scenario*

As mentioned earlier, there was a great deal of continuity in the relationship between the fishermen on either side of the Palk Bay, even after independence. But some of the developments during this period are worth mentioning. Up to the 1940s, the Rameswaram Island was only a seasonal base for migrant fishermen from the Gulf of Mannar side. Only a small group of cast-net fishermen permanently resided on the island. The *parava* fishermen from the Gulf would come with their fishing equipment during the lean season in the Gulf and base themselves in the island, putting up temporary huts. It is only after independence that the *parava* fishermen started settling down permanently in Rameswaram.

The changes in the post-independence period were essentially related to technological changes. In the beginning, the fishing craft of the Bay on both the Indian and Sri Lankan sides were non-motorized, with a predominance of *kattumarams*. A variety of traditional nets made of natural fibres were in use. The boat-seine (*thattumadi*) was an important gear for the *parava* fishermen who went after the shoaling fishes in an operation that needed

two *kattumarams*. Kachchativu, a small, uninhabited island (which has no water source) was of special significance for the fishing operations. It is located around two-and-a-half hours sailing distance from Rameswaram. In an era of non-motorized fishing, it was very useful as a base to exploit the fishing grounds that were difficult to cover in daily operations. Seasonally, the Rameswaram fishermen would put up huts and stay there for up to a week, conducting fishing operations. The island was ideal for drying the fish and nets. The fishermen from Mannar would also come and fish from Kachchativu, and both had an excellent understanding. It is worth noting that the two groups used different fishing gear (the boat-seine, in the case of the Rameswaram fishermen, and gill-nets, in the case of the Mannar fishermen) and had very little competition between them.

Kachchativu was also a place of annual pilgrimage to the St. Antony's church, which was under the ecclesiastical jurisdiction of the Bishop of Jaffna. Fisherfolk from both sides of the Palk Bay would turn up in large numbers for the annual feast.

An important development in the early 1960s that led to friction between the two groups of fishermen was the introduction of nylon nets in Sri Lanka. Finding the nylon nets much superior, the Rameswaram fishermen began to feel envious of their brothers across the Bay. Things became serious when some Indian fishermen started stealing the nylon nets at night when they were set at sea. This resulted in a clash and the first reported firing by the Sri Lankan Navy on Indian fishermen. The problem was, however, transient in nature and got resolved once the Indian fishermen also acquired nylon nets, which soon became easily available in India also. The nylon nets gave a boost to gill-netting, especially with large drift-nets. This, in turn, led to the Tuticorin *vallams* (canoes), which are solidly built and have greater carrying capacity, becoming more popular and replacing a part of the *kattumaram* fleet of Rameswaram.

The late 1960s saw another gear conflict erupting. This was due to the introduction of small mechanized trawlers (32-footers) on the Indian side in 1967. The trawlers created conflicts with artisanal fishermen on both sides of the bay. This problem also got resolved (at least as a source of conflict between the fishermen of the two countries) when the Sri Lankan fishermen acquired trawlers too. However, it must be understood that the trawler problem is a permanent one in India, with constant conflicts between the mechanized trawlers and the artisanal fishermen.

Thus, the pre-1974 period was one of a long history of close contact between the fishermen on either side of the Bay. Towards the end, however, new technological developments had led to some conflicts, which got resolved when the new technologies became accessible to both groups.

2.4 *The 1974 and 1976 Agreements*

In 1974, the Prime Ministers of India and Sri Lanka met to decide on crucial issues between the two countries that had been hanging fire for long. The most important issue that affected the relationship between the two countries was that of the 'Stateless Tamils', the large number of people from Tamil Nadu who had gone to work on the tea plantations of Sri Lanka during the British period and who were refused citizenship by independent Sri Lanka. The other pending problem had been the absence of a mutually agreed upon maritime boundary between India and Sri Lanka. This boundary problem was related to differences on the status of Kachchativu. Since the 1920s (well before independence!), the Sri Lankan side had been staking claims on the island, while India (represented by the Madras Presidency) was convinced that it belonged to India.

The Government of India (GoI) saw the Kachchativu problem as a minor irritant and the mandarins in Delhi felt that a 'barren rock' in mid-sea was not worth fighting for with a friendly country. The problem of the Stateless Tamils was the more serious one and all diplomatic energies were concentrated on that problem. Whether the concessions made by the Sri Lankans on the problem of the Stateless Tamils were satisfactory or not can be debated. However, the GoI felt satisfied enough to concede Kachchativu to Sri Lanka. As a result, a boundary in the Palk Bay was agreed upon, with Kachchativu going to the Sri Lankan side.

The extent to which the fishing interests were taken into account by either government is difficult to assess. Even for Sri Lanka, the main reason for seeking Kachchativu appears to have been a suspicion of untapped petroleum resources in the Bay. However, the fishermen on either side do not appear to have played any role in the negotiations and their opinions were never sought.

It is, however, worth noting that the 1974 Agreement has two special clauses that appear to protect the interest of Indian fishermen. Article 5 states:

Subject to the foregoing, the Indian fishermen and pilgrims will enjoy access to

visit Kachchativu as hitherto and will not be required by Sri Lanka to obtain travel documents or visas for these purposes.

Article 6 is even more significant, as it states:

The vessels of Sri Lanka and India will enjoy in each other's waters such rights as they have enjoyed therein.

While Article 5 relates to the continuing use of Kachchativu for pilgrimage and for drying nets and fish, Article 6 appears to grant Indian fishermen the right to continue fishing in the Palk Bay as before (even though fishing is not explicitly mentioned).

The Dravidian parties of Tamil Nadu (the Dravida Munnetra Kazhagam or DMK was in power) had strongly criticized the Agreement and the DMK members had walked out of the Indian parliament in protest. However, they were unable to make much impact on the GoI's thinking on the matter.

In 1976, another Agreement was signed between India and Sri Lanka on the boundary in the Bay of Bengal and the Gulf of Mannar. Both these boundaries were non-controversial, with no disputed island in the picture. The well-accepted principle of equidistance was adhered to.

Probably the most important event that actually deprived the Indian fishermen of their right to fish in the Palk Bay was an exchange of letters between India and Sri Lanka in 1976. In March 1976, the Foreign Secretary of India wrote to his counterpart that

"...the fishing vessels and fishermen of India shall not engage in fishing in the historic waters, the territorial sea and the exclusive economic zone of Sri Lanka nor shall the fishing vessels and fishermen of Sri Lanka engage in fishing in the historic waters, territorial sea and the exclusive economic zone of India, without the express permission of Sri Lanka or India, as the case may be..."

The contents of this letter, apparently, are also binding on the GoI and constitute an Agreement. The Minister of External Affairs, Y. B. Chavan, stated this categorically in Parliament:

"Consequent to the signing of the Agreement, there was also an Exchange of Letters ...This Exchange of Letters also constitutes an Agreement between

the two countries...Both countries have agreed that after the determination of the maritime boundary, fishing vessels and fishermen of one country shall not engage in fishing in the waters of the other..."

Thus, through an exchange of letters, the GoI had more or less given away the benefit that Article 6 of the 1974 Agreement appeared to grant to the Indian fishermen (despite some ambiguity in its wording).

2.5 1974 to 1983: some trouble, but business as usual

The Agreement of 1974 and the exchange of letters in 1976 did not lead to any significant change in the activities of the fishermen. It was business as usual. If anything, the fishing operations in the Bay only further intensified as a result of the expansion of the fleet of trawlers on both sides. The nylon net revolution had led to an increase in gill-netting on the Indian side and the number of vallams also increased as a result. Motorization of the vallams using single-cylinder diesel engines also took place, increasing their range of operations. The nylon net usage also meant that Kachchativu's significance as a centre for drying nets was lost. With increased mechanical propulsion, the need of Kachchativu as a base for fishing and fish drying was also reduced.

However, the Sri Lanka authorities did attempt to restrict fishing by Indian vessels on the basis of the Agreement. In this, they were obviously handicapped by the limitations of their navy. The Sri Lankan Navy, prior to the civil war, was a nominal entity and had very little capacity to undertake patrolling. Small vessels with handguns would occasionally stop Indian vessels and direct them to the Sri Lanka shores for interrogation and, subsequently, release them after a few hours. A significant fact was that, on such occasions, the Sri Lanka authorities would seize the fish and the nets. Often, the violations were by Indian trawlers and trawl nets would be seized. The Indian fishermen attributed this, in part, to the fact that trawling was still developing in Sri Lanka, and the seized Indian nets would find their way to Sri Lankan boats.

There seems no evidence that the Indian authorities had taken any steps to restrict the fishing vessels of Sri Lanka similarly. The Indian Coastguard, with a mandate to protect India's EEZ, came into being only in 1979, and if any action had to be taken, it was possible only after that.

2.6 *The civil war and its consequence*

The start of the civil war in 1983 completely altered the nature of the problem, and produced tragic consequences for the fishermen. The Liberation Tigers of Tamil Eelam (LTTE), which had open support from various political organizations in Tamil Nadu prior to the Indian Peace Keeping Force (IPKF) operations (and even after), was receiving supplies from the Tamil Nadu coast. The LTTE also developed its own naval wing called the 'Sea Tigers', which mounted deadly attacks at times on the Sri Lankan Navy. The Sri Lankan Navy had to expand its fleet and intensify patrolling to counter this threat. Innocent Indian fishermen have become victims of the war and many incidents have occurred in the last 15 years wherein Indian fishermen have been shot dead and many more wherein Indian fishermen have been taken into custody by Sri Lankan authorities and kept for months in detention in Sri Lanka.

Despite the mechanization of fishing and motorization of artisanal vessels, navigation is entirely based on fishermen's traditional skills and, in the absence of charts, it is difficult for the fishermen to pinpoint their location at sea. Modern communication equipment is non-existent and the fishermen normally do not know even the rudiments of signalling. This means that a patrol vessel cannot find out from a distance whether a vessel is a genuine fishing vessel or not. This increases chances of misidentification at night and shooting by jittery naval personnel.

From 1983 to 2001, 105 fishermen have been killed in firing by the Sri Lanka Navy, 286 fishermen injured and hundreds of fishermen arrested. Though the number of firings has come down since January 1997, the problem still remains intractable.

2.7 *The affected area and fishermen*

The Palk Bay is clearly the most affected area, as far as Indian fishermen are concerned. This is undoubtedly due to the earlier mentioned proximity. Even in the Palk Bay, the most affected place is the Rameswaram Island (in Ramanathapuram District), which is extremely close to Sri Lanka. Here both the mechanized boats (all using trawl nets) and the traditional canoes (Tuticorin-type vallams, with or without motors) can easily cross the IBL and get into trouble. Over 75 per cent of incidents involving shooting and arrest of fishermen by the Sri Lankan Navy relate to the Rameswaram Island.

As far as the rest of the Palk Bay is concerned, Jagadapattinam, an important mechanized landing centre in Pudukottai District, is the next affected centre, which has reported occasional incidents of shooting and arrest of Indian fishermen by the Sri Lankan Navy. Kottaipattinam, another mechanized boat centre, is also at times affected. Jagadapattinam and Kottaipattinam are around 32 km from the IBL.

Nagapattinam District also has a part of its coastline in the Palk Bay and a few incidents affecting centres of that district have also been reported. Kodikarai (Point Calimere), the northern end of the Palk Bay on the Indian side, is just 24 km from the IBL.

As far as the Bay of Bengal is concerned, it is generally unaffected but for the southern extreme of the coast close to the Palk Bay. Some fishing centres of Nagapattinam District and Karaikal (in the Union Territory of Pondicherry) have also, in the past, recorded incidents involving Indian fishermen and the Sri Lankan Navy.

As far as the Gulf of Mannar is concerned, if there is a problem, it is essentially on the northern end, south of Rameswaram. Boats from Mandapam that go fishing in the Gulf of Mannar have chances of reaching or crossing the IBL and hence are sometimes affected. Further down the coast, there are virtually no recorded incidents involving the Indian fishermen and the Sri Lankan Navy.

It must, however, be mentioned that the Arabian sea coast has had some incidents of artisanal fishing craft drifting to the Sri Lanka shores due to engine failure or natural causes in view of the deep-seagoing aptitude of the Kanyakumari fishermen and the risks they take. These incidents, of course, do not normally involve shooting or arrests.

To sum up, the affected area is essentially the Rameswaram-Mandapam area, with most incidents taking place in the Palk Bay and a few in the Gulf of Mannar. Jagadapattinam, Kottaipattinam and a few other centres of the Palk Bay are also occasionally affected. A few fishing centres on the southern end of the Bay of Bengal have also been affected.

The type of fishing vessel that gets affected is normally the small mechanized trawler (32-42 footers) that dominates the fishing in the affected areas. In Rameswaram Island, however, even the traditional canoes from the Pamban area are among those affected, in view of the proximity to the IBL and the use of large drift-nets. Occasionally, one hears of *kattumarams* also being affected. Both the mechanized boats and the vallams have a five-man

crew, while the *kattumarams* have just one or two persons on board. While the fishermen on vallams and *kattumarams* are locals, the crew of mechanized boats might come from distant centres and may, at times, include fishermen from castes not traditionally involved in fishing.

2.8 *Crossing the border: fisheries compulsions*

The closeness of the IBL to Rameswaram has been already discussed. When this fact is combined with the lack of proper equipment on board the Indian vessels, one may believe that this explains the inevitability of accidental border crossing by the Indian fishermen. However, such a scenario only provides a partial picture. Fishing vessels crossing over by mistake cover only a small percentage of the cases. The vast majority of border crossings is intentional and involves travelling deep into Sri Lankan waters. It is an open secret that Rameswaram fishing vessels, especially trawlers, find good fishing grounds only on the Sri Lankan side and, therefore, do most of their fishing on that side. Fishing takes place in Indian waters only in the season for oil sardines, when most trawlers do pair trawling with pelagic trawl nets. Prawns, the mainstay of the trawler fleet of Rameswaram, are mainly obtained in the Sri Lankan waters. Every alternate day, around 500 Rameswaram trawlers routinely cross the IBL into Sri Lankan waters to conduct fishing operations.

Behind this routine incursion into Sri Lankan waters lie the following factors:

1. the limited trawling grounds available on the Indian side;
2. the growth of the trawler fleet at Rameswaram to a level that has depleted the Indian grounds, so much so that its survival depends on fishing in Sri Lankan waters; and
3. the virtual collapse of the fishing operations on the Sri Lankan side of the Palk Bay due to the civil war, leaving the fishing grounds open to the Indian vessels without any competition.

The growth of the Rameswaram fleet and the increase in fish landings after the civil war started in 1983, provide validation for the above analysis. A. J. Vijayan has termed it “unnatural growth in the midst of severe constraints” in his report, *An Overview of the Marine Fisheries and Fishers in and*

around Rameswaram. The table from his report (Table 1) is revealing:

While the landings of Tamil Nadu increased during the 16 years under analysis, the growth of the fish landings in Palk Bay has been very significant and higher than for the other regions of Tamil Nadu. This is undoubtedly due to the additional fish resources and grounds tapped by the Palk Bay boats in the Sri Lanka waters due to the decline of fishing effort on the Sri Lankan side.

An important conclusion one can arrive from this analysis is that the Sri Lankan authorities are not strict in restricting Indian fishing vessels and that the few vessels captured each year are not normally for fisheries violations. The various incidents of capture and shooting are related to the situation created by the civil war that is still raging. Only when the civil war ends will the fisheries issues come to the fore.

2.9 *The problems of Sri Lankan fishermen*

It is worth noting that the above historical background is not of much consequence in understanding the problem of Sri Lankan fishermen arrested in Indian waters. This problem appears to have different origins altogether and needs to be analyzed separately. It is significant that the fishermen arrested by the Indian Coastguard do not come from the Palk Bay area, which is the area affected by the civil war. The phenomenon of Sri Lankan fishermen caught in Indian waters is also mostly a post-1990 phenomenon, long after the Indian Coastguard and the Maritime Zones of India (MZI) Act of 1981 came into existence. (This act deals with foreign fishing vessels in Indian territory.)

2.10 *The affected area and fishermen in Sri Lanka*

As mentioned, the Sri Lankan boats and fishermen regularly captured by the Indian Coastguard do not come from the Palk Bay, which is close to the IBL, but from other areas. The state of fishing, as well as the plight of the fishermen in the Palk Bay areas of Sri Lanka, is pathetic. The civil war has meant that there are severe restrictions on fishing, and fuel for mechanized operations is unavailable. Whenever they go fishing, the Sri Lanka vessels set out for short distances and come back soon. Similar is the case of fishermen on the war-affected east coast. It is only on the western coast (south of Mannar) and the south coast that fishing is normal and fisheries

Table 1: Coastal Regionwise Estimation of Marine Fish Production in Tamil Nadu

Year	Coromandal coast (35.0)*	Palk Bay (27.0)*	Gulf of Mannar (32.0)*	West Coast (6.0)*	Total (100.0)*
1980-84	57,850 (24.3)**	59875 (25.2)	66,559 (27.9)	53,858 (22.6)	238,142
1984-88	51,196 (20.5)	66,848 (26.7)	69,386 (27.8)	62,535 (25.0)	249,965
1988-92	67,527 (23.3)	101,116 (34.9)	87,948 (30.3)	33,265 (11.5)	289,856
1992-96	92,780 (28.6)	118,890 (36.7)	84,158 (25.9)	28,450 (8.8)	324,278

* per cent share of Tamil Nadu's coastline

** per cent share of Tamil Nadu catches in brackets

Source : S. Durairaj et al, Dept. of Fisheries, Govt. of Tamil Nadu, March 1997.

development has been taking place during the civil war period.

The fishing vessels of Sri Lanka can be broadly categorized into non-motorized craft, motorized craft and mechanized (multi-day) boats. The non-motorized craft are *kattumarams*, outrigger canoes (oru) and small canoes (vallam). The motorized craft are small 18-foot fibreglass reinforced plastic (FRP) boats with outboard motors (OBMs), which operate a variety of gear in the coastal waters. The mechanized vessels are essentially 40-50 foot vessels (wooden and FRP), that go deep into the ocean for long voyages of 2-3 weeks, operating longlines and gill-nets for offshore pelagic resources like tuna and pelagic sharks.

On the western and southern coasts, non-motorized fishing has become marginal in most places as the artisanal fishermen have shifted to the FRP motorized craft, which the government promoted with subsidies during the 1960s and 1970s. These FRP boats are used with many small gill-nets and handlines for coastal fishing on the continental shelf. With Sri Lanka being a small island country with a narrow continental shelf, it is no wonder that the limit to fisheries development was being felt in the early 1980s itself. The artisanal fishermen of the west coast used to migrate during the lean season to the north and east before the civil war. This stopped after 1983, and the fishing pressure has, therefore, increased in the shelf areas of the western and southern coasts. The government, aware of the dangers of this, has promoted a new class of vessels that can fish in the deeper waters and go after untapped resources. These vessels called 'multi-day fishing boats' are 40-50 foot vessels with good insulated fish-holds and have the capacity for staying up to a month at sea. Almost all of them have good navigation aids like the Global Positioning System (GPS) and navigational charts. They are

also equipped with radio equipment that enables them to communicate with other vessels at sea as well as their home base. The fishing methods are passive and most vessels use a large drift-net in combination with a pelagic longline. The fishing is entirely in the deep sea, and mainly for tuna and shark.

It is the growth of this multi-day fishing boat fleet that has contributed to the problem of Sri Lankan fishermen getting caught by the Indian Coastguard. Except for the rare FRP boat that drifts accidentally towards the Indian coast in the Gulf of Mannar, the Sri Lankan vessels captured are all multi-day fishing boats, which are found operating in the Arabian Sea and the Bay of Bengal. A number of them are caught near the Andamans and the Lakshwadeep Islands. It is worth mentioning that the Sri Lankan boats are caught even as far as in the Maldives and Seychelles.

The current fleet strength of multi-day fishing boats is around 1,500 and they are spread over half a dozen landing centres on the west and southern coasts of Sri Lanka. The government provides up to 50 per cent subsidy for these vessels and the fleet is still growing. In the early phase, the vessels were smaller and the ownership was with artisanal fishermen who graduated from FRP boats. But now the size is increasing and even 60-footers, each costing over Rs50 lakhs (nearly US\$100,000), have made their entry, and are owned by rich entrepreneurial fishermen. There are clear indications that this large fleet cannot survive on just the tuna and shark resources of Sri Lanka's EEZ and have to necessarily poach in other waters for survival. It is interesting that these vessels often make a beeline for island territories, where there is an aggregation of tuna resources.

The Indian Coastguard is very strict in the implementation of the MZI Act, and Sri Lankan

fishing vessels inside India's EEZ are caught and handed over to civilian authorities on shore.

Thus, it is the multi-day vessels from the west and south coasts of Sri Lanka that are caught in Indian waters, and it is worth noting that they are manned by traditional, predominantly Sinhala, fishermen.

2.11 *Concluding observations on the problem of IBL crossing*

It will be obvious from the above detailed history of the problem that the crossing of the IBL by the Sri Lankan and Indian fishing vessels are rarely due to honest mistakes or unavoidable reasons like engine failure, natural causes, etc. By and large, the IBL crossing is deliberate and meant for better fishing opportunities. In both cases, the respective governments (of Tamil Nadu and Sri Lanka) have actively promoted the development of fishing fleets that cannot fish profitably in their own grounds and whose economics depend on 'poaching' in foreign waters.

3 Fate of Captured/Arrested Fishermen

The fate of fishermen captured/arrested when found beyond the IBL of their respective countries varies considerably, as both countries have different approaches to the problem and the internal systems of managing such problems differ substantially. The administrative structures, legal system and political dynamics are all different, leading to different results.

3.1 *Indian fishermen in Sri Lanka*

As discussed earlier, the Indian fishermen cross the IBL in large numbers routinely in the Palk Bay and are generally ignored by the Sri Lankan Navy. It is only on certain occasions that they are caught, normally for security-related concerns. It should be understood that the primary task of the Sri Lankan Navy is related to the civil war, and the large number of fishing boats are a major distraction as well as an impediment to achieving military goals. The Sri Lankan side has controlled this problem by severely curbing fishing operations in the north and east. There are times when fishing is completely prohibited for the Sri Lankan fishermen in the affected areas. At other times, there are very strict regulations on durations and distances for fishing. The loss of livelihoods and incomes of

the fishermen in the north and east, and the acute distress caused by this is one of the untold stories of our time. Such restrictions on the Indian boats are not feasible and practical, given the Indian situation. At the time of the IPKF operations, the option of banning/regulating fishing was seriously considered by the Indian Navy and Coastguard, but given up as impractical, due to the large numbers whose livelihoods would have been affected and the high political costs of such an action.

A major problem at sea is the difficulty in distinguishing between genuine fishing boats and those that are involved in nefarious activities. The absence of communication and signalling systems on board the Indian vessels, and the difficulty in distinguishing Indian fishermen from Sri Lankan fishermen (all Tamils), create conditions for genuine fishing boats to be apprehended by the Sri Lankan Navy. The unpredictability of the LTTE and fear of its methods have also led to a policy of 'shoot first, question later'. Analyzing the incidents of firings and capture reveals the following reasons attributed by the fishermen themselves for their occurrence:

1. suspicious behaviour on the part of Indian fishing boats when approached by Sri Lankan naval vessels, which, in turn, might stem from fear of the intentions of the Sri Lankan Navy.
2. mere trigger-happy response on the part of Sri Lankan naval personnel at times of tension.
3. venting of anger on Indian vessels in retaliation for LTTE actions.

Once again, it must be emphasized that the capture of Indian fishing vessels is a rare event in the overall scheme of things, but even these rare events have tragic consequences and vitiate the atmosphere. The frequency of such incidents also tends to fluctuate from time to time and may have some connection with the course of the civil war in Sri Lanka. Table 2 gives the number of firings and casualties over the years.

The actual number affected is likely to rise by around 10 per cent, if incidents outside the Palk Bay are also accounted for. Since 1998, the number of incidents has gone down. This is attributed by the Coastguard to the various discussions between the Indian and Sri Lankan naval authorities, as a result of which the Sri Lankan Navy has been asked to restrain itself when dealing with Indian fishing vessels.

Table 2: Incidents Involving Death or Injury
to Fishermen in the Palk Bay
(1983 – 2000)

Year	No. of Incidents	No. of Fishermen			Boats Sunk
		Killed	Missing	Injured	
1983	2			5	
1984	4	1		5	
1985	33	4		87	
1986	2			2	
1987	4	3		4	
1988	4	1		7	
1989	2			5	
1990	11	6		37	
1991	17	13		18	
1992	7			23	
1993	8	8		5	
1994	10	8		8	
1995	10	6		13	
1996	31	7	12	20	5
1997	15	13	2	11	1
1998	4	6		1	
1999	7	7		2	
2000	5	2		3	
Total	176	85	14	276	6

Source: Computed from information provided by the Asst. Director of Fisheries, Rameswaram

The actual incidents of shooting recalled by the survivors are harrowing and heart-rending. In one of the incidents, the lone survivor escaped as he was covered with others' blood and was given up for dead.

Those who survived and those who were taken into custody without being shot at are then sent to Sri Lanka's nearest port and handed over to the local police. The main centres where they are taken are Kankesanthurai, Mannar, Vavunia and Jaffna, depending on where they are caught. In many cases, the fishermen are kept in military custody for a day or two, until arrangements can be made to hand them over to the police. One has to remember that a war is being fought in the areas where the fishermen are taken into custody.

3.2 From arrest to release: the process

In some instances, the boat and crew are released in a few days, after a mere enquiry, without charging the fishermen. In such cases, if the boat is in good condition, the fishermen may straightaway return by sea to Rameswaram. However, once charges are made, they are then taken to the court at Anuradhapura. In the first few weeks, the fishermen might

be shunted from location to location and kept in more than one jail. Normally, after they are produced in the Anuradhapura court, they are taken to jails in the west and south of the country. One of the jails where most fishermen are kept is the Kalutara prison, south of Colombo. The charges are normally for illegal entry into Sri Lankan territory. Quite often, the charges may be under the Prevention of Terrorism Act.

The actual court case and the entire litigation process vary considerably from case to case. The Immigration Department and the Attorney General's office are normally the two government departments that are concerned with the cases. If the pressure from the Indian side is strong enough, the cases are often withdrawn or compromised so that the fishermen can be released. In the last four years, local NGOs who are in touch with Indian NGOs have intervened with legal assistance and have helped to expedite the release in many cases. While there may be, in some cases, genuine reasons to suspect smuggling and other nefarious activities, in most cases, the actual charges need not necessarily indicate the real situation. In some cases, where the charges (true or false) are serious and require

punishment, the fishermen have been let off with nominal fines of a few thousand rupees per head.

Once the cases are withdrawn or settled, the fishermen are then taken to the Mirihana camp in Colombo, where foreigners of all nationalities are kept until they are repatriated. It is an open-air camp, with considerable freedom of movement. Inmates who have been there for months may even go outside for a cup of tea or to buy some personal articles. Once in the camp, it is for the Indian government and the Indian High Commission in Colombo to work out details of repatriation. For long, the fishermen would be flown to the north of Sri Lanka and taken to the places where their boats are in custody. From there, they are allowed to sail back to India. Another variation of this used to be the taking of the fishermen by a naval vessel and transfer to the vessels of the Indian Navy or Coastguard at mid-sea. Quite often, the fishermen would return to India after months in Sri Lanka, only to be confronted with the problem of getting their boats back. There have been years when getting the boat back has been extremely difficult and many a boat has been damaged beyond salvage. Generally, after considerable amount of negotiations between the Indian and Sri Lankan authorities, the order for taking the boat back is received. Then, a large group of Indian fishermen is permitted to sail across to Sri Lanka and bring back the boat in custody, after the necessary repairs.

In the last couple of years, the transfer of the released fishermen from Mirihana camp to the north of Sri Lanka and the mid-sea transfer of fishermen have more or less stopped. This appears to be due to security problems and the unwillingness of the Sri Lankan authorities to spare the necessary aeroplanes and naval vessels. Hence, in recent times, the fishermen have to be sent by commercial flight from Colombo to Trivandrum, which is the nearest Indian airport. The Indian High Commission issues a temporary passport and buys the fishermen air tickets and sends them home. The expense for the air ticket is normally treated as a loan to the fishermen. This is just for the record and no fisherman ever repays the loan. Perhaps if they have to approach the passport office in India for a permanent passport, they may be asked to repay the loan. Once back in India, the fishermen will then have to work to get the boat back from wherever it is anchored in the north of Sri Lanka.

The total time involved can vary considerably for the entire process to take place. The lucky fishermen are those who are released in a few days, without having to go through the entire process.

For the rest, the process may take a few weeks or many months. With the exception of fishermen who are sentenced for smuggling or other offences, the time spent by an Indian fisherman before he is free ranges from three months to a maximum of one year.

Some fishermen who have spent time in the Sri Lankan police stations and prisons have had bitter experiences. In the initial enquiry after capture, third-degree methods are often used. This is undoubtedly due to the war situation and the suspicion that Sri Lankan military or police have of Indian fishermen abetting the LTTE. Even in the regular prisons, the fishermen have, at times, faced problems. There are many hardcore LTTE cadres in some of the prisons and Indian fishermen may get caught in the tensions that exist between the jail authorities and the Tamil militants.

3.3 *Sri Lankan fishermen in India*

As explained in the previous section, the Sri Lankan fishermen who end up in Indian prisons are entirely from the west and the south, with a few from the east of Sri Lanka. The Sri Lankan fishermen from the north and the northeast are never involved in this process, as a rule. Inevitably, it is the multi-day fishing boat that is captured in Indian waters. In some seasons, the arrests are mostly in the Gulf of Mannar, while, in other months, it takes place in the Arabian Sea. Some boats, especially those from the east, are captured in the Bay of Bengal. Another area of arrest is near the Andaman Islands.

The Indian Coastguard tries to strictly implement the MZI Act and captures Sri Lankan boats that are clearly in the Indian EEZ. Given the vastness of the ocean and the difficulty of identifying small boats, it is quite likely that only some of the boats that enter the Indian waters are actually captured by the Indian Coastguard. The Coastguard is, however, very strict and there is no question of sending back the Sri Lankan boats. The boats are captured, the fishermen arrested and brought to the nearest Coastguard base. On shore, the fishermen and boats are promptly handed over to civilian authorities. Tuticorin, on the Gulf of Mannar coast, and Kochi (Cochin), on the Arabian coast, are the most common centres where the arrested fishermen are brought. The Thermalnagar Police Station in Tuticorin and the Cochin Harbour Police Station are normally the police stations that take charge of the fishermen. After preliminary enquiries, the fishermen are produced before the designated court for

MZI offences in Ramanathapuram or Cochin, as the case may be. They are then remanded until a final decision is taken. The fishermen are periodically brought to the court and remanded until the Indian authorities decide to release the fishermen or to prosecute them. Normally, the charges are for violating the MZI Act, Passport Act and Foreigners' Act.

Once in the Indian jail, it takes a long time before the authorities take a decision on the fate of the fishermen. India's federal set-up ensues that both the State and Central governments have to co-ordinate between themselves to take a decision. While it is the Home Department that takes up the matter on behalf of the State government, at the central level, the Ministries of Home, External Affairs and Agriculture are all involved in deciding the course of action. The State Government has to make the necessary enquiries about the bona fides of the fishermen and then send a report to the central government. If all the three central ministries give their 'no objection', the cases are withdrawn and the fishermen sent back home.

Despite the charges made under the various Acts, it is the Maritime Zones of India Act of 1981 (MZI) that is the most relevant Act. Seven courts have been designated all over India to handle offences under the MZI and these include the courts at Cochin and Ramanathapuram. The MZI provides for punishing the owner or the skipper of any foreign fishing vessel found illegally fishing in India's EEZ. The crew, as such, are not punishable, but the owner or skipper can be punished with a hefty fine. The boat and its contents can also be confiscated. The punishment is more severe, with provision for imprisonment in the case of vessels that are found within the territorial waters.

Until 1999, the general approach of the Government of India has been to release the fishermen and the boat without entering into prosecution. After ascertaining that the fishermen are bona fide and no other criminal offence is involved, the State Government is advised to withdraw the cases and send the fishermen back with their boats. The fact is that India and Sri Lanka are friendly countries with an excellent bilateral relationship. This has obviously been the reason for not prosecuting the fishermen and punishing them according to the provisions of the MZI Act. This is in stark contrast to what happens on the Indo-Pakistan border, where fishermen, once arrested, are kept in jail for years and are strictly prosecuted as per the MZI Act.

However, the withdrawal of cases is a long, cumbersome process involving a great deal of red

tape. It is rare for an arrested Sri Lankan fisherman to go back within three months. Often, the whole process can take up to a year. The Sri Lankan High Commission in India, as well as NGOs in India, have been taking up the issue with the concerned departments in an attempt to expedite the process. In Tamil Nadu, the State Government has even set up an inter-departmental committee to look into cases against foreign fishermen and expedite the cases. However, the time factor still remains a major problem on the Indian side. It is extremely unfortunate that fishermen are held up to a year in prison on remand for offences that are not punishable with imprisonment, or for offences that the Government of India is not ready to prosecute.

Over the last year or so, the problem has become more complicated with the Ministry of Agriculture, which deals with MZI offences, insisting on prosecuting the skippers. Earlier, all fishermen on the multi-day fishing boats were treated as a homogeneous group and no distinction made between the crew and skippers. But now, one of the fishermen in charge of the operations, but who is otherwise no different from the others in terms of work or qualification, is prosecuted and punished. In one case, the Cochin court gave orders for confiscation of the boat and the payment of a fine of Rs100,000 (around US\$2,000). As it was beyond the capacity of the fishermen to pay the fine, he had to undergo six months imprisonment. This has raised a number of legal issues, especially since the United Nations Convention on the Law of the Sea (UNCLOS) specifically prohibits the incarceration of fishermen who are found poaching.

Thus, the Sri Lankan fishermen who are arrested in Indian waters face the process of a long and uncomfortable stay in India. While there are no other risks like those faced by the Indian fishermen in Sri Lanka, the time period for returning home is much longer and can lead to demoralization.

3.4 *Efforts by NGOs*

The increasing number of arrests on both sides has led various NGOs concerned with the fishermen's welfare to get involved in the process. On the Indian side, a trade union and NGO initiative led to the formation of the Alliance for Release of Innocent Fishermen (ARIF). ARIF is a loose network of trade unions, NGOs and fishermen's associations that is equally committed to the release of bona fide fishermen from India as well as Sri Lanka. On the Sri Lankan side, there is no particular organization or network that takes up the issue. How-

ever, there are a number of actors who get involved and take effective action. While the Forum for Human Dignity gets involved in providing legal assistance to Indian fishermen, other NGOs, trade unions and fishermen's organizations get involved in providing various kinds of information and support. Since Sri Lanka is a much smaller country and most things get decided at Colombo, the Sri Lankan NGOs are more effective in getting Indian fishermen released than the Indian NGOs in getting Sri Lankan fishermen released. The last three to four years have seen a great deal of action from the side of NGOs and they have acquired considerable knowledge and information about the nature of the problem. Both the governments have recognized the useful role played by the NGOs and often use their help. The governments have their own limitations in getting involved in court cases against their nationals in other countries. They also do not have much capacity for providing humanitarian assistance when their nationals are in the jails of other countries. Thus, the NGOs come in handy even for the governments, in many situations.

4 Short-term and Long-term Solutions for the Problem

It is very clear that the fishermen of both sides have various compulsions to cross over and fish in the waters of the neighbouring country. It can be even argued that, in the case of the Palk Bay, the fishermen have been unjustly deprived of fishing rights they have traditionally enjoyed. The arrest of fishermen leads to considerable suffering for the affected households and also has significant local political repercussions in both India and Sri Lanka. It is, therefore, essential that both the governments evolve creative solutions to tackle this particular problem.

A major hurdle for finding solutions is the lack of understanding of the causes for border crossing at the policy-making levels of both countries. Officially, both countries seem to subscribe to the myth that fishermen are crossing the border at sea due to ignorance or due to accident. That there are strong fisheries compulsions to cross the borders is not appreciated sufficiently. Moreover, it needs to be understood that these fisheries compulsions are, in turn, the result of the fisheries development policies pursued by both the governments. Only if this reality is squarely faced can practicable solutions emerge.

There are a number of options to solve the problem associated with border crossing by the fishermen of both countries. Which option is preferable depends on the policy that appeals to the two countries. The following are some of the options that can be considered:

Option 1: Free access

This option is discussed first as it has been proposed by many fishermen's organizations like the National Fishermen's Forum (NFF) and the World Forum of Fishworkers (WFF). The idea is that fishermen of South Asia should have the freedom to fish in each other's waters. Most fishermen's groups are ready for such a solution, as there seems to be very little animosity between fishermen across borders. The small fishermen of Tamil Nadu and Kerala who encounter the multi-day fishing boats of Sri Lanka in the Arabian Sea do not see them as outsiders, but even exchange rations with them. In fact, the same small boats might be ready to capture and burn an Indian trawler, as the fishing method is considered harmful to the interest of the small fishermen.

On the Sri Lankan side, such a free-access policy actually exists in the Palk Bay. Close linguistic and ethnic ties between fishermen on both sides ensure that such an open-access policy is not a big problem. It should, however, be understood that the Sri Lankan fishermen in the Palk Bay are currently unable to properly fish, on account of the civil war. They are, in fact, unhappy with the large-scale trawling that is done in their waters by Indian vessels. It is possible that if fishing restrictions on Sri Lankan fishermen are removed, there may be a clash of interest between the Indian and Sri Lankan vessels.

A major objection to this option is that it can endanger the fish resources if no restriction is placed on the number of units or type of fishing gear. Also, the governments may not feel comfortable, given the security concerns that exist in South Asia.

Option 2: Returning fishermen without any litigation

This is perhaps not much different from the first option, except that it does not involve the formal legalization of border crossing by fishermen. It is also close to the actual position that both governments have been taking in most cases. Sri Lanka has sent back many groups of fishermen without charging them in a court of law. India, until recently,

has been routinely sending back Sri Lankan fishermen without actually prosecuting them. What both governments seem to be mainly interested in, is to know whether the concerned fishermen are genuine fishermen and whether there are any other security-related problems. If this is so, then this can be formalized, and mechanisms developed for the quick release and return of the fishermen. All that is needed is that the local police ensure that the fishermen are bona fide, and seek permission to return the fishermen from one nodal agency or authority in the country. Fishermen could be sent back within a week or two if this can be agreed upon, substantially reducing the loss of income and other suffering they have to otherwise undergo.

This solution also has the defect that it does not consider the possible dangers to the fish resources. However, it is something that can be useful in the short term, until better approaches can be worked out. If resource monitoring is done simultaneously, the governments can step in with appropriate regulations at the right time.

Option 3: Strict enforcement, but with a humane approach

If the governments are unwilling to allow resource exploitation by the fishermen of the neighbouring country, and wish to be strict in enforcing the laws regarding poaching, it can be done in a lot more simple and humane manner. For example, the following could be a typical scenario in this option:

Once a group of fishermen is brought to shore for poaching, the local police should establish that the group was only involved in fishing and is made up of bona fide fishermen. Once this is established, the crew, against whom no punishment is possible in the national as well as international laws, should be repatriated without any delay. This whole process should not take more than a week or two, at the most. Subsequently, the skipper is charged and presented in a court of law. If he pleads guilty, no elaborate trial is called for and a clear set of graded fines can be enforced. For a first-time offence, the fine could be Rs20,000. For a second offence, it could be Rs50,000 and, in the case of the third time, the boat may be confiscated. In the case of the first and second-time offences, the boat may be confiscated only if the fine is not paid. In no case should the skipper be punished with imprisonment, as the skippers are only ordinary fishermen.

This is an eminently practical solution, but whether this requires changes in the laws of the two countries needs to be carefully studied. However,

a problem is that this solution may result in an unequal situation. While the Indian Coastguard may be able to apprehend the poachers and take the necessary action, the Sri Lankan Navy may not be in a position to enforce its law in the Palk Bay, where poaching by Indian vessels normally takes place. For one, the civil war is its priority rather than protection of fish resources. Secondly, the large-scale incursion of Indian vessels makes enforcement tricky and the political fallout in Tamil Nadu and the consequent impact on Indo-Sri Lankan relations, unpredictable. Let us not forget that public opinion in Tamil Nadu has considerable influence on Indo-Sri Lankan relations and the Sri Lankan government may be loath to spoiling relations with India for the sake of fish resources in the Palk Bay, as long as the civil war is in progress.

Option 4: Reciprocal access

Given the reality of the Palk Bay situation and the virtual impossibility of enforcing any rules in the current situation, Sri Lanka could formally allow Indian vessels to fish on its side of the Palk Bay, making a virtue of necessity. It could, in turn, ask for reciprocal access to its multi-day fishing boats in the Arabian Sea, the Gulf of Mannar and perhaps the Bay of Bengal. The formula could be that if 500 Rameswaram boats are regularly fishing in the Palk Bay, Sri Lanka could also be allowed to send around 500 multi-day fishing boats into Indian waters. The actual ratio will have to be thrashed out, if this concept is acceptable. This option will involve some kind of licensing or accreditation to fish (without charging a sizeable fee), after the numbers of boats have been fixed for both sides.

This option is a serious one and could be the basis of a workable arrangement. It may be of particular interest to the State of Tamil Nadu on the Indian side, as its problems will get solved. For the Sri Lankans, it is a reasonable solution, at least until peace returns to its north and northeast of the country. Sri Lanka's problems may not be fully solved if most of its 1,500-strong multi-day fishing fleet is not accredited as part of the reciprocal arrangement. The part of the fleet that fails to get accommodated may be forced to continue as 'poachers'. Some amount of fleet control will have to be exercised by both India and Sri Lanka.

Option 5: Separate management regimes for each ecosystem

From a purely fisheries perspective, it makes little sense in having the same approach to the four different seas: the Palk Bay, the Gulf of Mannar, the Bay of Bengal and the Arabian Sea. There are differences in fish resources and their levels of exploitation. The Palk Bay is, more or less, a shallow sea with a practically closed ecosystem. The fishing is entirely restricted to the continental shelf. Shrimp and other demersal species are the main targets, and trawl is the dominant gear. In the other seas, the situation varies according to the depth and region. It is, therefore, meaningful to have separate management regimes for each sea, taking into account the specificities of resources, their current exploitation, technological options, fishermen interests, etc.

In the Palk Bay, the narrowness of the sea makes separate resource management by India and Sri Lanka, on their respective sides of the IBL, an impossibility. From a pure resource management perspective (ignoring the civil war and politics), only a joint management by India and Sri Lanka can ensure proper exploitation and conservation. A joint system of regulation and management is called for, including restrictions on fleet size, gear regulations, etc. Solutions, like each country's fleet fishing on alternate days, need to be considered. However, all this is perhaps meaningless at the moment and will have to wait for peace to return to Sri Lanka. Until then, the status quo may have to be maintained (that is, freedom for the Indian fleet to fish in the Bay).

In the other seas, the distances are vast and, despite tuna and shark being common oceanic resources, independent management regimes are practical. In any case, it is the Indians who will have to open up their seas to the Sri Lankans, at least until a deep-sea fleet emerges in India. In-

dia could enter into an Agreement with Sri Lanka, providing licences to a specified number of multi-day fishing boats in each sea, taking into account the resources available and India's scope for exploiting them. It needs to be understood that, with the exception of the Thoothoor fishermen of Tamil Nadu's Kanyakumari District, India does not have the skill to tap the resources beyond the continental shelf, unlike the Sri Lankans. India has always looked towards large-scale technologies from distant countries (European countries, Taiwan, Thailand, etc.) for exploiting its deep-sea resources and has, time and again, run into resistance from its own fishermen for such policies. It needs to look at the relatively small-scale and passive technology developed by Sri Lanka as a better alternative that will cause less harm to its resources and arouse less anger from its fishermen. India could safely provide licences to the Sri Lankan fleet without endangering its resources. A reasonable fee of Rs100,000-200,000 could be charged per year per boat for fishing in Indian waters.

India could even promote joint ventures (JVs) between fishermen of both countries as alternative to the JVs that are usually between large corporations. Some of the adventurous fishermen in India could learn many things from the Sri Lankans and lay the foundation for India's own deep-sea fleet, with appropriate indigenous technology.

5 Conclusion

The problem of fishermen crossing borders is a serious problem on the Indo-Sri Lankan maritime border. It has led to great deal of suffering among the fisherfolk on both sides. Both governments are treating the problem without acknowledging the real causes behind the problem. The problems need to be squarely faced and creative solutions found so that national interests, as well as fishermen's livelihoods, are protected.

Issues Related to Deep-sea Fishermen and Their Families Due to Detention in Foreign Countries

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Abstract

Increasingly, deep-sea fishing vessels from Sri Lanka cross borders and get arrested by the navy or coastguards of other countries. In addition to Maldives, Bangladesh and India, Sri Lankan fishermen have also been detained by countries as far away as Thailand, Diego Garcia, Australia, Seychelles and Myanmar.

This paper examines the main causes of such detention, and its economic and social effects. The paper also proposes measures that may be adopted, by institutions such as governments and non-governmental organizations (NGOs), to mitigate the difficulties caused by detention of Sri Lankan fishermen in other countries.

Keywords

Exclusive economic zone. National Fisheries Solidarity (NAFSO). Thailand. Diego Garcia. Australia. Seychelles. Myanmar. Maldives. Bangladesh. India. UNCLOS. South Indian Federation of Fishermen Societies (SIFFS). Trivandrum District Fishermen Federation (TDFD). Association for Release of Innocent Fishermen (ARIF). World Forum of Fisher Peoples (WFFP). Transborder issues. South Asian Association for Regional Co-operation (SAARC). South Asian Free Trade Association (SAFTA).

1 Introduction

It is a growing trend for deep-sea fishing vessels from Sri Lanka to cross borders and get arrested by the navy or coastguards of other countries. At the same time, the deep-sea fishermen, as well as the small boats, operate in their own exclusive economic zones (EEZs).

Very importantly, those vessels operate within the contiguous zone of Sri Lanka. This is a very important factor that explains why foreign vessels come into Sri Lankan waters, while Sri Lanka's own deep-sea fishing vessels are moving around the world for fish.

One of the main activities of National Fisheries Solidarity (NAFSO) is to secure the release of the fishermen arrested in the neighbouring countries. NAFSO has worked with the families of the arrested fishermen, as we recount in this report.

2 The present situation

Sri Lankan fishermen are moving all over the world and getting arrested in distant waters. Thailand, Diego Garcia, Australia, Seychelles and Myanmar are some of the countries they have been caught in, besides Maldives, Bangladesh and India.

Table 1 lists the figures of fishermen arrested, boats captured and fishermen repatriated for the past six years.

Recent experience with captured boats and arrested fishermen in India has been frustrating. Last year, 155 fishermen were arrested and 30 fishing vessels captured by the Indian Coastguard or Navy. Earlier, the average period of captivity for arrested fishermen was five to six months. But last year's case was very different and the captivity period extended to 12-15 months. During this period, the fisher families were utterly helpless. The boat-owners were not ready to attend to the families'

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Table 1

Year	No. of Captured Boats	Repatriated Fishermen
1996	53	133
1997	32	160
1998	38	182
1999	27	125
2000	30	253
2001 (up to 07.01)	17	63

Source: Department of Fisheries, Minister of Fisheries and Aquatic Resources Development, Sri Lanka

grievances. The authorities were also not in favour of the fisher families. The situation became serious when the number of captured boats increased.

The fisher families approached the Ministry of Fisheries (MoF) for help, individually. But the MoF was awaiting a response from the Ministry of Foreign Affairs, which is the authority responsible for dealing with such matters.

3 Causes of Marine Disasters

Marine disasters occur from complex causes and are often assignable not to a single but a number of adverse conditions. Most marine disasters occur due to one, or a combination, of the following causes:

- abnormal meteorological conditions and adverse marine phenomena
- lack of skill in manoeuvring the vessel
- ignorance or negligence of the crew
- deficiency of navigation aids
- lack of meteorological data
- deterioration of the hull, engine and other parts of the vessel
- deficient installation or malfunction of nautical instruments
- manoeuvring beyond the vessel's capacity
- lack of understanding on the part of the vessel owner

However, with the exception of some cases, the crossing of borders by Sri Lankan and Indian fishermen hardly happens due to the above conditions. The fishermen at Mannar claim that Tamil Nadu fishermen come near the seashore and operate their bottom-trawling vessels for prawns, whereas a Sri Lankan fisherman who returned from an Indian jail last August said that, having experienced long periods of imprisonment, Sri Lankan fishermen do not bother to cross the borders to fish in the Indian territory, where there is a high risk of arrest.

The abovementioned causes are very rarely valid for those fishermen who cross borders intentionally. Only very few cases have been reported of boats drifting beyond borders due to engine trouble or gusty winds. Since nobody can find boundaries at sea, the fishermen do not bother about them. Their major concern is only to catch the maximum amount of fish in order to earn a higher income.

4 Problems Faced by the Fisher Families

4.1 Lack of information

The boatowners come to know of the arrest of their boat and crew only after some time has elapsed. Some of the fisher families do not know what has happened to the boat and the crew. Boatowners do not bother to inform the families, even as they are trying to secure the release of their captured boats.

The family members are invariably in trouble as they often do not know the boatowners, other members of the crew, or the registration number or any other basic information about the boat. It is

only the boatowner who knows all the facts related to the boat.

The government provides six months ration subsidy for the fisher families of the arrested fishermen. To claim the subsidy, all the details of the boat need to be furnished. Thus, the families are in trouble from the very beginning if they do not have basic information on the boat. Though the fisher families approach the MoF for assistance, the ministry's role is limited as the Foreign Affairs Ministry can get involved only through their foreign missions.

4.2 *Survival*

When the fishermen are arrested, the main issue is the survival of the family. Most of the time, the boatowners do not provide any assistance for the family's survival. As the skipper and the crew are the only breadwinners of the family, the members cannot survive without assistance. The government provides some subsidy for the families. But our experience of the government subsidy scheme is not very encouraging or positive. The subsidies are not provided on time and not for all the families. But the amount of subsidy provided by the Department of Social Welfare as relief assistance cannot be ignored (Table 2).

Though we do not have exact figures, the Department of Social Welfare spent around Rs1 mn as relief assistance subsidy.

4.3 *Education of children*

When the survival issue hits the family, education becomes a secondary issue. As the routine expenditure cycle is affected by the long detention period of the breadwinners of the family, their children lose out on schooling and, ultimately, become dropouts. Last year alone, 15 children left school due to the economic instability of their families.

4.4 *Social issues*

The fishermen's wives face a number of difficulties as their husbands are away from the family. Some of the boatowners try to abuse the wives, when their husbands are in foreign jails. Neighbours try to tempt them as they know these women are in trouble. A number of wives narrated their situation to us, as they did not have anyone else to share these bad experiences.

4.5 *Broken families*

A few cases of broken families have been reported. When the wives cannot run the families, they resort to easy solutions to survive the long period of detention of their husbands. But often these solutions are not sustainable.

5 **Problems Faced by the Arrested Crew**

Almost all the members of the crew reported that they were beaten up by the navy or the Coastguard when arrested. The communication gap created great difficulties, as most of the Sri Lankan fishermen could speak only the Sinhala language. Few could speak Tamil. Prison life was painful and the food provided unfamiliar, causing some to fall ill.

Delayed court cases are painful. The fishermen were taken to the court every other week, without any hearing. Inability to communicate with the lawyers was also a big problem for the fishermen.

Some of the crew in the jails shared their pathetic situation: no clothes (only one sarong and a shirt); no medicines; no money to send a letter to their families; and no basic facilities like soap, toothpaste, brush, etc.

6 **Problems Faced by the Boatowners**

Most of the boatowners are still repaying bank loans for their boats. The repayment installment varies from Rs75,000–100,000, according to the amount of loan. The situation becomes serious when they have only one boat. The boatowners are in trouble when the crew's families approach them and they are not in a position to help. This situation creates misunderstanding between the families and the boatowners.

In our experience, only a few boatowners helped the families during last year's cases. The boatowners do not regard assistance for the fisher families' survival as their responsibility. Since the captured boats lie decaying at the harbours, the boatowners care more about getting their boats, rather than the fishermen, released.

7 **Experience with Indian Authorities**

It takes almost 18 months to get some of the Sri Lankan fishermen released from Indian jails. While we cannot claim that the Sri Lankan fishermen are entirely blameless in the current situation, the authorities ought to consider Article 76 of the 1982

Table 2

Year	District	Boats	Families	Cost (Rs)
1996	Negombo	7	35	165,288
	Chilaw	9	47	201,844
	Puttlam	1	5	20,236
	Kalutara	1	1	13,860
1997	Negombo	10	47	168,840
	Chilaw	2	9	10,364
	Matara	1	3	10,584
	Total	31	147	591,066

Source: Ministry of Fisheries and Aquatic Resources Development 1998

United Nations Convention on the Law of the Sea (UNCLOS), which says that such crew must be repatriated promptly.

But the actual situation is different and cases drag on for up to one year before the first batch of crew is released. In India, both the State and Central governments are responsible for release orders. There are three ministries in Delhi responsible for this matter: the Ministry of Home Affairs, the Ministry of External Affairs, and the Ministry of Agriculture. Only after receiving release orders from all three ministries will the courts of the State be ready to withdraw the cases.

But sometimes, even after receiving release orders from the Central government, the Indian courts choose not to withdraw the cases due to certain technical reasons.

The fishermen get frustrated when the relevant officials do not appear in the court as witnesses. Some of the fishermen told us that they even contemplated suicide when the officials did not turn up in court on two consecutive occasions.

8 Government's Role

Government authorities provided the Sri Lankan prisoners with dry rations for six months, though they were received after a long time. The Sri Lanka Ministry of Fisheries (MoF) co-ordinated the issue with the Indian Foreign Affairs Ministry.

When the families back home raised their voices, the MoF resolved to send the highest gov-

ernment delegates to India to discuss the issue with the Indian government.

Thus, a three-member delegation went to India and the Minister of Fisheries and Aquatic Resources Development himself met the Indian Minister of Agriculture for a settlement. The MoF spent millions of Sri Lankan rupees for the repatriation of the fishermen, as detailed in Table 3.

9 Role of NGOs

Both Indian and Sri Lankan NGOs played a mediating role with the government and others to settle the issues. They also organized people for collective efforts for short-term and long-term solutions. As a result of these collective efforts, the authorities had to listen to the voice of the people.

From India, the South Indian Federation of Fishermen Societies (SIFFS), the Trivandrum District Fishermen Federation (TDFF), the Association for Release of Innocent Fishermen (ARIF) and the World Forum of Fisher Peoples (WFFP) played very important solidarity roles to get the fishermen released. They intervened in legal matters and other welfare measures needed for the fishermen. They conducted advocacy work with policymakers to get the fishermen released soon.

10 Possible Collaborative Action

Action needs to be taken along the following lines:

Table 3

Year	Boats Released	Fishermen Repatriated	Repatriation Costs (Rs)
1996	22	133	581,201
1997	30	160	1,358,157
1998	33	182	1,237,566
1999	17	125	1,000,000
2000	29	253	3,761,361
2001(up to June 30)	1	63	446,811

Source: Department of Fisheries, Ministry of Fisheries and Aquatic Resources Development

1. There should be an information centre to immediately issue reports about any vessels captured.
2. UNCLOS provisions should be followed for any incident related to vessels captured for crossing borders.
3. Articles 17, 18 and 19 of UNCLOS permit the right of innocent passage through international waters. These should be recognized.
4. Legal advisers with due authority to intervene in transborder issues must be appointed in the respective foreign missions of Sri Lanka and India.
5. There should be a bilateral agreement to settle the cases within a reasonable period.
6. There should be a co-ordination body for NGOs working on transborder issues.
7. Bilateral agreements between neighbouring countries like Sri Lanka and India must be reached to reasonably exploit the fish resources in the Indian Ocean. We propose a Memorandum of Understanding for fisheries in both the territories.
8. There must be a multilateral agreement among countries of the South Asian Association for Regional Co-operation (SAARC) for exploitation of fish resources using approved appropriate technologies.
9. A Co-ordinating Secretariat for Indian Ocean fisheries issues must be formed with the necessary powers to intervene in fishermen's issues, without disturbing national sovereignty.
10. Governments must be encouraged to identify the resource potential of their own waters and not exceed it, so as not to export overcapacity and overfishing efforts.

11 Conclusion

Intentionally or unintentionally, thousands of fisher people cross maritime borders, though only a few get caught. We should question why they cross borders. If we can find a reasonable answer, we should think of how to settle the issue amicably. We should find ways for fishermen to reasonably share the resources in the sea. Just as there is an agreement for free trade in the South Asian region—the South Asian Free Trade Association or SAFTA—perhaps we need to think of another agreement for reasonable exploitation of fish resources in the sea.

The Elusive Line that Reduces Fishworkers to Mere Numbers

*Souparna Lahiri **

Abstract

The sustained efforts of the South Asian Labour Forum (SALF) towards addressing the plight of the detained fishworkers of India and Pakistan have borne fruit. After a long four years, the Pakistani and Indian governments finalized the list of 35 Indian fishing boats and 193 fishworkers, and 29 Pakistani boats and 195 Pakistani fishworkers, who were exchanged on 15 July 1997 and repatriated to their home countries.

Since then, SALF has been instrumental in the release of fishworkers in 1998 and also in 1999, at a time when the bilateral relations between the two countries deteriorated. These releases were followed by two more periodic releases, one each in the next two years as goodwill gestures. SALF has intervened whenever the detention of fishworkers has become prolonged and also helped both the governments to finalize the list of arrested fishworkers.

SALF believes that the arbitrary arrest of fishworkers and their imprisonment should be stopped permanently. The ridiculous practice of 'exchange protocol' should be done away with. Instead, a proper policy, in consonance with UNCLOS, should be framed to release the arrested fishworkers immediately after they are apprehended.

Keywords

India. Pakistan. SALF. Fishworkers. Exchange protocol. Maritime boundaries. Rann of Kachchh. Indus Delta. Sir Creek. Sindh. Bilateral maritime agreement.

1 Introduction

Naushad Ali, from Karachi, Pakistan, was on board *Al Ameerah* along with his fellow fishworkers, when the fishing boat was apprehended by the Indian Coastguard on 8 October 1989. After a torturous process of captivity, court appearances, jail terms and a prolonged detention in police custody, Naushad and the other crew members of *Al Ameerah* were finally released by the Indian authorities in early 1998.

It was the night of Diwali in October 1993, when Dhanji Harji Rathod's boat was captured by the Pakistan Maritime Security Agency. Dhanji and the other crew members of the boat *Dhan Laxmi* were sent to Landhi jail, Karachi. Hailing from Mangrol, in the Indian State of Gujarat, and the island of Diu, these fishworkers could finally get back to their families only in July 1997.

Both Naushad and Dhanji earn their livelihood from fishing in the Arabian Sea and are among approximately 1,500 Pakistani and Indian fishworkers arrested by the maritime security agencies of the two countries since 1987. Captured and incarcerated for alleged violation of maritime boundaries, they have been reduced to mere numbers in the diplomatic exercises between these two countries.

2 The Arrest and Imprisonment of Fishworkers: The Context

The Arabian Sea around the Gulf of Kachchh and across Kori Creek and Sir Creek—the mouth of the Indus Delta—is where a large number of fishworkers from Pakistan and India congregate to earn their livelihoods. This is also the region from where most of the fishworkers are arrested. These

*South Asian Labour Forum (SALF). Prepared by Centre for Education and Communication, New Delhi, India.

fishworkers are arrested for alleged violation of maritime boundaries and also territorial waters, in some cases. A number of arrested Pakistani and Indian fishworkers told a South Asian Labour Forum (SALF) Factfinding Team in May 1997 that, in the absence of a visible demarcation line, they are unable to understand whether they have actually crossed the maritime boundary or not. Many of these fishworkers also said that they were probably picked up from their own waters.

K. C. Pande, the Commandant of the Coastguard, Porbandar, told the Factfinding Team, "There are no signs on the sea which demarcate the sea border. Above all, there is no agreed boundary on the Arabian Sea between India and Pakistan. For their mutual convenience, the patrolling agencies have worked out an imaginary line along the Sir Creek Region off the coast of Kachchh."

According to the Gujarat Marine Product Exporters Association, the sea waters off the Rann of Kachchh and the Indus Delta make up the richest fishing ground in South Asia. The various creeks are rich with high-value shrimps. This is probably the reason why the fishworkers prefer this region, knowing full well the perils of their venture. The Indian fishworkers from Gujarat are increasingly venturing into this area as their catch off the Saurashtra coast is decreasing alarmingly, mainly due to overfishing by trawlers, pollution and discharge of industrial waste into the sea waters.

The region where most of the fishing boats are apprehended by the security agencies lies 70–80 km off the port of Jakhau in Gujarat and a few kilometres from Koteswar in the Gulf of Kachchh. In fact, a large number of captured Pakistani fishing boats were anchored in Koteswar and the fishworkers were first taken to Bhuj and then transferred to Jamnagar and Porbandar jails.

3 UNCLOS and the Maritime Boundary Dispute

Though the United Nations Convention on the Law of the Sea (UNCLOS) has a very clear guidelines regarding protection and utilization of precious marine resources vis-à-vis the territorial integrity and sovereignty of the coastal States, today the innocent fishworkers of Pakistan and India, who earn their livelihoods from the Arabian Sea, are a much troubled and harassed lot primarily due to the absence of a maritime boundary agreement between the two countries and the insensitivity shown by

their governments to the human dimension of the tragedy that has unfolded.

In security parlance, the non-existence of a bilateral maritime agreement in an UNCLOS regime is seen as a dispute, giving rise to possible conflict situations. For India and Pakistan, this non-compliance with UNCLOS is linked to the border dispute over the 60-mile long estuary of Sir Creek in the marshes of the Rann of Kachchh. The Sir Creek area lies on the land border between the Indian State of Gujarat and the Pakistani province of Sindh.

Following the 1982 UNCLOS, ratified in November 1994, Pakistan and India, being two adjacent coastal States, could have demarcated their maritime boundaries and formulated a bilateral agreement. But the Sir Creek dispute has thwarted this process. Pakistan contests its claim over the Sir Creek based on the map agreed to in 1914 by the Princely State of Kachchh and the British India government. This map places the boundary on the east bank of the Creek. India insists on treating the line in the middle of the Creek as the boundary.

In 1994, New Delhi offered to delineate the boundary seawards, which was rejected by Islamabad, fearing that any acceptance would lead inadvertently to the demarcation of a marine boundary without actually solving the land dispute. The concept of an exclusive economic zone (EEZ) and a continental shelf under the UNCLOS regime might have also helped in hardening their stand. If a line is drawn in the centre of Sir Creek, as demanded by India, then Pakistan would lose 2,246 sq km of EEZ. If the line is drawn on the east bank of the Creek, then Pakistan would gain approximately 1,300 sq km of EEZ. Consequently, a huge area of continental shelf will change hands. UNCLOS also necessitates the adjacent coastal States to declare a baseline before a median line is drawn to demarcate the maritime boundary. Only Pakistan has so far declared a baseline in 1996.

The continuing maritime dispute thus violates the rights of the innocent fishworkers to earn their livelihoods, and is precipitating a serious human tragedy as well. Continuing and indiscriminate arrest and apprehension of the fishworkers on either side of the border has led to insecurity among the seagoing fisherfolk in the Arabian Sea. It has also led to a conflict-like situation between the two countries on a non-conflictual issue. The only silver lining is that the UNCLOS regime will have to eventually step in if the dispute is not solved by 2004.

4 Implications of the Absence of a Bilateral Maritime Agreement

Though both Pakistan and India have not agreed to a maritime boundary, the two countries, however, have enacted laws protecting their maritime boundaries, EEZs, territorial waters and continental shelf.

The maritime boundaries of Pakistan are governed by Exclusive Economic Zone (Regulation of Fishing) Act, 1975 and Territorial Waters and Maritime Zones Act, 1976. The maritime boundaries of India are governed by Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976 and Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1981.

These Acts, therefore, are being enforced on the fishworkers fishing along the coast of Pakistan and India for transgressing an imaginary boundary line—an imaginary boundary line, which is invisible and not demarcated. For this alleged violation, the fishworkers are imprisoned and are liable to a hefty fine ranging between Rs 1–1.5 mn, whereas Parts 2 and 3 of the Article 73 of the UNCLOS, 1983 state:

Arrested vessels and their crews shall be promptly released upon the posting of reasonable bond or other security.

and:

Coastal State penalties for violations of fisheries laws and regulations in the exclusive economic zone may not include imprisonment, in the absence of agreements to the contrary by the States concerned, or any other form of corporal punishment.

As a matter of general international law, a coastal State may enforce any measures necessary to ensure compliance with its laws and regulations in jurisdictional zones. The power of the coastal States is one of policing and control. However, violators cannot be met with measures that amount to retaliation or summary punishment. Even bilateral fishing agreements now provide for the release of a seized vessel if a bond has been deposited. Furthermore, both legislation and fishing agreements envisage prompt notification, as mandated in Article 73 (4) of UNCLOS.

R. Venkatramani, a senior Supreme Court Counsel and member of the SALF Factfinding

Team, is of the view that, in the case of fishworkers from either country, in the absence of lines of demarcation being drawn and the prohibited zones being made clear, no intention to violate the law can be attributed to them.

In other words, a bilateral agreement is a precondition for humane enforcement of law since the basic tenets of the agreement have to be incorporated in the corpus of the law, and this needs to be emphasized over and over again.

Otherwise, the fishworkers will continue to be arrested arbitrarily and languish in jail for indefinite periods, only to be released at the will of the States or as part of a diplomatic exercise and goodwill gestures on the basis of what can be called an "exchange protocol" (as has happened in 1987, 1988, 1993 and from July 1997 right up to the run-up to the Indo-Pak Summit in July 2001). The innocent fishworkers, in search of livelihood, are thus turned into 'prisoners of war'.

5 Enforcement of Laws and the Human Tragedy

K. C. Pande, the Commandant of the Coastguard, Porbandar, acknowledged to the SALF Factfinding Team, "Fishing boats can unwillingly and unknowingly cross into other's territory because of tidal currents, wind force, cyclone and engine failures. The captured Pakistani fishing boats have no navigational aids. Also, no Pakistani fishing boats were found with arms and ammunitions on board." In this connection, Venkatramani also says that natural factors, such as tidal forces and oceanic currents, have to be accorded due place before one can reach a conclusion or draw an inference that the lines of demarcation have been willfully crossed. It would be preposterous and against all notions of fair play to accuse persons of violating the law despite serious deficiencies in its implementation or that the law has so far not been rendered implementable.

Both the then Foreign Minister of India, I. K. Gujral, and the Home Minister, Indrajit Gupta, admitted to the SALF delegation, which met them in New Delhi on 4 December 1996, that the captured fishworkers are innocent and nothing incriminating has been found on them. Still, these fishworkers are arrested, imprisoned, hauled up to the courts and detained for indefinite periods.

The clue lies in the candid admission of the Coastguard officials that there is a practice of "tit for tat" among the enforcement agencies of the two countries: "They capture so many of our boats and,

in retaliation, we capture that many of theirs." As the political climate between the two countries vitiated, the innocent fishworkers are made scapegoats of deteriorating mutual relations. Even the children are not spared. Between 1993 and 1996, the Pakistani agencies arrested and detained 36 Indian children who were accompanying their relations on Indian fishing boats. A series of interventions by human rights organizations and trade unions across the borders finally resulted in their release in March 1996.

Manji Dayar (18) and Nanji Murji (12) were two such children. Hailing from the Vanakvada village of Diu, they fearfully remembered the day in November 1994 when they were caught in the ocean. It was early morning. There was firing in the air. The Pakistani Navy stopped their boat and cut the net. All the people on board, including the father of Nanji, were taken to Karachi and kept in police custody for three days and then sent to Landhi jail. The children were later shifted to the Edhi Home. Manji has since become a wage labourer and would never venture into the sea in the future. Nanji was studying in Standard VII when he was captured. After returning, he did not continue his studies.

Ghani Rehman, the captain of *Al Jaison* fishing boat, captured by the Indian Coastguard in November 1994, spent more than three years in Porbandar jail before being sent back to Karachi. Being the only earning member of his family, Ghani's wife and children barely survived the trauma. Mohammed Hussain, on board *Al Kabutar*, was arrested in November 1996. During the next six months, his parents died and his wife and children were left to fend for themselves.

Naushad Ali, Muhammed Iqbal, Abu Usmaan, Ali Abu Samariya, Babul Gulmuhammad, Gaurar Khan Bahadur, Nisar Ahmed, Ibrahim and Khamisa were all fishing on board *Al Ameera* when they were caught by the Indian Coastguard on 8 October 1989. Ibrahim and 12 others on board *Al Subhanallah* were also apprehended in January 1988 and taken to Bhuj jail. They were charged under the MZI Act, the Passport Act, the Foreigners Act and the Gold Control Act. All these delayed their trial procedures and they were kept in jail custody until September 1996, when the Gujarat High Court quashed all the charges levelled against them and ordered them to be deported. The High Court refused to take cognizance of offences under the Passport Act and the Foreigners Act since they are not applicable beyond the territorial waters. These 22 fishworkers were then unlawfully detained in the

custody of Porbandar police until a very strong intervention by the SALF partners in India and Pakistan finally forced the Indian authorities to release them from illegal captivity.

First Information Reports (FIRs) and jail documents available with SALF clearly point out that the Passport Act and the Foreigners Act have been frequently used by the enforcement agencies to delay the procedure of justice and prolong the agony of the arrested fishworkers and their families back home.

Velji Lakshman, a fishworker from the Vanakvada village of Diu, was arrested by the Pakistani Navy in October 1993 and kept in Landhi jail, Karachi. In his letter to his family back home, Velji wrote, "They caught us by force in the ocean. For five days, we were kept in the boat itself. Then they took us to jail. We get one cup of pulses and two loaves of bread to eat. The bread is half-baked. Even our enemies should never suffer jail..."

Mulji Lakshman was in a Pakistani jail for more than three years. Back home, his wife Ramila and their two sons and two daughters were spending their days in dire hardship. Ramila used to get work for 10–15 days in a month and earn Rs350–400. She met the Collector, Commissioner and others for the release of her husband. She pleaded for financial help. Ramila got only false promises. Mulji had written to Ramila, "There are no clothes to wear. No bed to sleep on. Half a bread in the morning. Two in the afternoon... Take care of the children. Do not have any hope for us."

Raja Ram, the owner and captain of the fishing boat *Naran Prasad*, was captured along with his other crew in October 1994 by the Pakistani security agencies and charged with violation of territorial waters. Raja Ram said, "We were definitely picked up from Indian waters. We had been away for less than 24 hours when we were arrested." Raja Ram was in his early forties and had four children. He returned to his home in Diu in July 1997, but lost his boat and his son Dhuru. Both he and Dhuru were arrested. Dhuru escaped from the juvenile jail in Karachi and the family had not heard of him since then. Raja Ram's wife was shocked to silence. She could only mutter that she got her husband back but lost her son. For them, life would never be the same again.

The SALF Factfinding Team, which visited the arrested Pakistani fishworkers in Porbandar jails and the families of detained Indian fishworkers, concluded:

1. Since the late 1980s, the only way out for both the arrested Pakistani and Indian fishworkers is the protocol of exchange of prisoners. They are exchanged and not released.
2. It is an open secret in official circles that, irrespective of the fishworkers being acquitted or released from jails after serving out their sentences, they have to wait for the next round of exchange to take place.
3. The exchange of prisoners takes place on the basis of long-drawn negotiations between the two governments. The fishworker detainees are never told the reasons or the grounds for their detention or about impediments in the way of their release.
4. Those who were detained in jails, as well as those who were detained in police camps, have been deprived of their rights under Article 21 of the Indian Constitution and guarantees under the International Covenant on Civil and Political Rights.
5. It needs to be noticed that the legislations themselves, in the absence of provisions for their implementation, would constitute unconstitutional encroachment on the rights of these fishworkers.

6 Interventions by Labour Organizations

'Fishworkers in Jail' was the first issue taken up by the Preparatory Committee, SALF, in which the trade unions and labour support groups from South Asia are the constituents. SALF was formed in Kathmandu in May 1996 at a South Asia-level Consultation.

For the first time, the trade unions forged an alliance, on a seemingly non-economic issue, and, significantly, on something that very remotely affects them. Central trade unions, trade unions of workers in the informal sector and labour support organizations established solidarity among themselves that led to a co-ordinated action to uphold and protect the rights of fishworkers to earn their livelihoods. Not only was the method employed by the trade unions unconventional, it was also a unique instance of international solidarity.

The SALF initiative across Pakistan, India, Sri Lanka and Bangladesh contributed to bringing to the forefront, the human aspect, in a situation where diplomatic exercises and difficult bilateral

relations have wantonly violated the rights of the fishworkers. They are treated not as human beings but as mere numbers in diplomatic communications.

An important aspect of the SALF initiative was that simultaneous action took place both in India and Pakistan. The fishworkers and national trade unions in Pakistan, carried on a concerted campaign to seek the release of both Indian and Pakistani fishworkers.

In July 1996, the National Fishworkers Forum (NFF), India, in a letter to the Indian Foreign Minister, I. K. Gujral, requested him "to take necessary steps to release these innocent fishworkers who were incarcerated in Pakistani jails for no reason of theirs."

On 4 December 1996, a SALF delegation, comprising trade union representatives from India, Pakistan, Sri Lanka, Bangladesh and Nepal, met Gujral and Indrajit Gupta, the then Home Minister of India.

Following this meeting, the SALF partners in Pakistan launched a press campaign focusing on the prolonged detention of fishworkers. Many journalists in Pakistan took the initiative to gather more information about the detained fishworkers. Comprehensive reports prepared by investigative journalists appeared in the newspapers.

The SALF Pakistan partners, in collaboration with the Fishermen's Co-operative Society and the Human Rights Commission, paid visits to all the jails in Sindh province where the Indian fishworkers were detained, and compiled a comprehensive list of 242 arrested fishworkers and also distributed among them clothing, blankets, medicines, and so on.

SALF Pakistan continued to keep in touch with various government agencies, including the successive prime ministers and foreign ministers, and kept the pressure on them.

In the meantime, on 15 April 1997, the main Indian trade unions, in a joint statement released in Delhi, stated, "The government should set aside the convictions of Pakistani fishermen and start the due process for their release. The Government of India should also take initiative in formulating a long-term policy, whereby such arrests and long-term detention of innocent fishermen are not repeated."

The Indian Chapter of SALF decided in April 1997 to send a Factfinding Team of labour leaders, legal expert and mediapersons. The team was to meet the Pakistani fishworkers in Indian jails and the family members of the Indian fishworkers jailed in Pakistan. The team also decided to make an

on-the-spot assessment of the situation arising out of these arbitrary arrests and to come out with a comprehensive report on the entire problem, with specific observations and recommendations. This Factfinding visit was undertaken in Gujarat and Diu between 21–23 May 1997. The report of the team was released on 14 July 1997.

Eventually, the sustained efforts of SALF towards addressing the plight of the detained fishworkers bore fruit. After four long years, the Pakistani and Indian governments finalized the list of 35 Indian fishing boats and 193 fishworkers and 29 Pakistani boats and 195 Pakistani fishworkers, who were exchanged on 15 July 1997 and repatriated to their home countries.

Since then, SALF has been instrumental in the release of fishworkers in 1998 and also in 1999, at a time when the bilateral relations between the two countries deteriorated. These releases were followed by two more periodic releases, one each in the next two years as signs of goodwill gestures. SALF has intervened whenever the detention of fishworkers has become prolonged and also helped both the governments to finalize the list of arrested fishworkers.

SALF, however, has failed to make any headway in forcing the governments to formulate short- and long-term policies to address the periodic arrests of fishworkers for violating marine boundaries, nor have they come any closer to a bilateral agreement. Deteriorating relations and the long-drawn dispute over Sir Creek are two major reasons for this failure. However, both the countries have agreed to treat the plight of the fishworkers as a humane issue and

have taken a positive approach towards releasing the arrested fishworkers as quickly as possible.

7 Possible Solutions

1. The arbitrary arrest of the fishworkers and their imprisonment should be stopped permanently. The ridiculous practice of 'exchange protocol' should be done away with. Instead, a proper policy, in consonance with UNCLOS, should be framed to release the arrested fishworkers immediately after they are apprehended.
2. India and Pakistan should immediately formulate a bilateral maritime agreement that should clearly define the demarcation line and practical measures like light buoys should be used to make the actual line visible.
3. The continuing dispute over Sir Creek cannot be allowed to play havoc on the livelihoods of thousands of fishworkers. Both the countries should strive for a temporary and working solution and agreement until the dispute is settled.
4. Considering the regional dimension of the issue, there must be a regional maritime agreement at the SAARC level.
5. Fishworkers organizations and trade unions across South Asia should be represented and consulted on any bilateral or regional negotiation regarding this matter.

Illegal Fishing in Seychelles: A Review of its Implications for a Small Island Developing State

*Rondolph Payet **

Abstract

This paper reviews the current developments in Seychelles to curb illegal, unregulated and unreported (IUU) fishing and its potential implication for small island States. IUU fishing is an activity that undermines the fisheries management effort of a fishing nation, and the consequences are numerous. These can range from short- to long-term social and economic problems. The increase of IUU fishing activities in the western Indian Ocean over the past few years, especially with regard to the domestic fishing fleet, sends out a clear message to the neighbouring countries that steps should be taken to ensure that the coastal fishing nations take seriously their responsibility for responsible fishing practices.

In this regard, the Seychelles has taken certain necessary steps to ensure that vessels flying its flag abide by national and regional and international agreements to which it is party. It is believed that the Seychelles is a model for the small island and coastal States in providing the institutional mechanism to prevent, deter and eliminate IUU fishing.

Keywords

Illegal, unregulated and unreported fishing. IUU . Small island States. Fisheries management. Western Indian Ocean. MCS. Compliance Agreement. IPOA .

1 Introduction

In the context of the Food and Agriculture Organization of the United Nations (FAO) Code of Conduct for Responsible Fisheries and its overall objective of sustainable fisheries, the issue of illegal, unreported and unregulated (IUU) fishing in the world's fisheries is serious and of increasing concern. Consequently, IUU fishing undermines the efforts of coastal States to conserve and manage fish stocks in all capture fisheries. In most cases, national, regional and international fisheries management organizations can fail to achieve management goals. These issues can lead to the loss of both short- and long-term social and economic opportunities and to negative effects on food security and environmental protection. In addition, such actions can lead to the collapse of a fishery or seriously impair efforts to rebuild stocks that have already

been depleted. According to FAO (2000), international instruments addressing IUU fishing have not been effective due to a lack of political will, priority, capacity and resources to ratify or accede to, and implement, them. This has been witnessed in the western Indian Ocean.

This paper reviews the current developments in Seychelles to curb IUU fishing, and its potential implication for small island States.

2 Illegal Fishing

FAO refers to illegal fishing as activities conducted (i) by national or foreign vessels in waters under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations; (ii) in violation of national laws of international obligations, including those undertaken

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by co-operating States to relevant regional fisheries management organization; and (iii) by vessels flying the flags of States that are parties to relevant regional fisheries management measures adopted by that organization or relevant provisions of the applicable international law and by which the States are bound.

Poaching within the exclusive economic zone (EEZ) is a serious fishing problem. The world's major fisheries are concentrated in the waters overlying the continental shelves, as these areas support large populations of fish and because the depths are easier for artisanal fishermen to reach. The competition for the remaining fish is intense. This, consequently, leads to further IUU fishing in national and international waters. Illegal fishing has been identified as a major threat to marine biodiversity.

3 Causes of Illegal Fishing

Although there may be a general obligation to protect and conserve the resources of the global commons, under current international law, it is generally the responsibility of the flag State to enforce these obligations. Unless a treaty is self-executing, each State must legislate provisions into law and then enforce that law. All too often, States fail to implement or enforce their treaty obligations. In addition, some States routinely exempt themselves from honouring these treaties. Both of these practices undermine the effective implementation of sustainable fishing practices.

The existence of excess fishing capacity in coastal fisheries presents a favourable environment for alternative fishing practices such as IUU fishing, due to social and economic hardships. Illegal fishing in developing countries arises from a combination of a lack of appropriate management system, political will, enforcement capacity and financial resources to ratify regional or international treaties.

4 The Seychelles Fishery

The Republic of Seychelles is a group of approximately 115 islands scattered over an EEZ of just under 400,000 sq nautical miles. The principal groups of islands are situated between 4° and 5° south of the equator, at a longitude of between 55° and 56° east. The main group of islands are granitic, all within 30 miles of Mahé, the main island. The remaining islands are coralline and are more widely spread.

There are two principal continental shelves or plateau areas; the Mahé Plateau and the Amirantes. These constitute the main fishing areas for the artisanal fishery. In fact, there are two facets to the Seychelles fisheries and they exploit two distinct resources. The domestic segment exploits the demersal resources, while the foreign industrial vessels target larger pelagics (tuna) under access agreements. The artisanal fishery employs around 500–700 full-time fishermen and up to about 400–500 casual fishermen. The annual catch of the domestic fishery is estimated at around 5,000 tonnes per year, with the main species being the amberjack, snapper and groupers, with approximately 700 tonnes exported annually. Declining catch rates since the 1990s have shown the need for more responsible fishing practices.

The local fishing industry, which caters for the local market, has been recognized for protection and management. The following measures have been implemented.

- Reservation of the demersal fishery, namely on the Mahé and Amirantes plateaus, for Seychellois only.
- Introduction of restricted zones to ensure that industrial fishing activities are not allowed to have undue adverse effects on the local supply of fish.
- Regulation of access to fishing grounds on the outlying islands.
- Creation of fishery reserves to promote responsible fishing practices.
- Development of mother ship management plans.
- Facilities to promote sustainable fisheries development.

The importance of the artisanal fishery in Seychelles is derived from the fact that it not only provides employment opportunities but also food security. The expanded 200-mile jurisdiction provides the nation's main source of protein. The industrial fishery is carried out mainly by foreign fishing vessels. Seychelles nationals are also operating in this sector, but at the semi-industrial level, targeting mainly swordfish and tuna. Last year, around 10 local vessels were involved in this fishery and approximately 400 tonnes of fish were landed.

Between 42 and 48 purse-seiners were licensed to fish in the Seychelles water in 2000. The total catch in the Indian Ocean by purse-seiners holding

Seychelles licences is estimated at 330,340 tonnes. The vessels targeting the tuna fishery are notably of Spanish, French, Belize, Italy, Mauritius, Netherlands Antilles, Panama, Seychelles and Iran flags. A total of 165 licences for longline fishing were issued to 137 longliners in 2000. The main vessels engaged in this method of fishing are from Taiwan, Korea, Japan, Indonesia, and a few from the European Union.

Foreign fishing has been on the increase since the mid-1980s, with purse-seiners being more significant from the Seychelles point of view. New fishing regulations were introduced with the aim to:

- reserve the shallow plateau areas for local fishermen;
- require transshipment through Port Victoria;
- impose an obligation both to prevent unauthorized incursions and to gather data on levels of exploitation of the resource;
- promote sustainable fishing practices and abide by international and regional agreements and protocols; and
- incorporate provisions of the UN Convention on the Law of the Sea (UNCLOS).

With future challenges, including those of enforcing the national law over a huge maritime zone and keeping pace with the changing trends in markets and international maritime law, responsible fishing practices in Seychelles has somehow become a priority, and many coastal States do not have the necessary resources to fulfil the emerging issues associated with IUU fishing.

5 Illegal Fishing in Seychelles Waters

Seychelles has not been excluded from illegal fishing activities in its waters. Since the enactment of the Maritime Zone Act (1977), numerous vessels have been apprehended for fishing illegally in Seychelles waters. The activities of the illegal fishing include (i) under-reporting catch; (ii) illegal transshipment at sea; (iii) keeping double sets of log books; and (iv) fishing in restricted zones.

Overall, it is believed that there is good compliance with Seychelles EEZ regulations. From 1991 to 2001, 22 vessels have been apprehended for illegal fishing in Seychelles waters, these being from Korea (1), Spain (7), Taiwan (4), the Reunion Islands (2), Sri Lanka (5), Indonesia (1), Madagascar

(1) and Seychelles (1) (see Annex 1 and 3). Most of the vessels apprehended for illegal fishing in Seychelles' waters were charged with fishing without a valid licence. In total, 27 per cent of vessels apprehended were of an artisanal nature, originating mainly from Sri Lanka, which raised some concerns regarding fishing coastal States' responsibilities vis-à-vis international and regional agreements. Two illegal fishing cases are summarized below to illustrate some of the consequences to both parties.

The first case of illegal fishing in Seychelles was recorded on 9 January 1991, when a Japanese vessel, *Sumi Maru 25*, was spotted fishing in Seychelles' waters. The ship's captain and the owner of the vessel were charged with fishing without a licence in Seychelles' waters. They pleaded guilty to the offence, and the vessel was forfeited to the State. The captain was ordered to pay US\$15,000 and the owner US\$75,000. The catch was also confiscated and later sold at US\$126,000. The court of appeal upheld the seizure of the vessel and its catch, but the fines of the captain and the owner were reduced. The forfeited vessel was later used by a State enterprise to develop longline fishing in Seychelles with a Korean crew. However, within three years of operation, due to financial losses, it was sold to a third party. These illegal activities have serious short- and long-term economic implications and serious repercussions on the countries enforcing EEZ regulations.

A more recent event (on 23 April 2001) was the apprehension, following reports by the local fishermen, of a 43-m Malagasy vessel, *Modell Majenga*, fishing in the Seychelles waters without a valid licence. The vessel had a crew of 110 persons, believed to be fishing for sea cucumbers. Due to the living conditions on the vessel, the Seychelles government had to repatriate most of the crew to Madagascar from the revenue obtained from the sale of the sea cucumber forfeited. The captain and one of the crew members were charged with fishing in Seychelles' waters without a valid licence. They pleaded guilty and an out-of-court-settlement was set at 70,000 francs. However, this arrangement did not materialize. The case continues and the vessel is expected to be forfeited. This situation reinforces the issue of the increasing fishing capacity in the coastal region and its long-term social implications. Sea cucumber resources around the Malagasy waters are severely overexploited, and so, these coastal fishermen eventually reverted to IUU operations to sustain their livelihoods. This illustrates a typical example of the problems faced by

developing coastal States, whose consequences are sometimes irreversible.

Overall, enforcement in Seychelles over the past 10 years has been relying on third-party reporting of suspected IUU fishing in Seychelles waters and shore-based activities, such as inspection of log books. It has been quite effective, though resources for active enforcement have been limited.

Almost all the illegal fishing activities involving coastal fishermen fishing without a licence in Seychelles' waters have resulted in the forfeiture of their vessels, as the fines have been too high to be settled. Recently, Seychelles has opted for bilateral agreements with neighbouring countries like Sri Lanka to curb illegal fishing. This might be one of the solutions for IUU fishing in the Indian Ocean Rim. In the case of the industrial fishing nations, out-of-court settlements have been most common.

6 Seychelles Contribution to Curb IUU

Seychelles has been very active in ensuring its responsibility as a coastal fishing nation. The principal legislation governing the EEZ is the Maritime Zones Act of 1977, which came into force on 1 August 1977. It gives basis to the Seychelles EEZ and also to EEZ resource rights, namely:

- sovereign rights for the purpose of exploration, conservation and management of all resources, these being:
 - exclusive jurisdiction to preserve and protect the marine environment and to prevent and control marine pollution; and
 - exclusive jurisdiction to authorize, regulate and conduct scientific research; and
- such other rights as are recognized by international law or State practice.

The Fisheries Act of 1986, 1987 and subsequent amendments govern the fisheries of Seychelles. The Seychelles signed UNCLOS in 1982 and ratified it on 16 September 1991. The UN Convention on Highly Migratory Fish Stocks and Straddling Fish Stocks came into force in 1995 and Seychelles has made efforts to translate this convention into national regulations. Parties to this agreement are required to “co-operate to manage relevant stocks” and, in particular, to:

- adopt measures to ensure long-term sustainability;

- collect and share, in a timely manner, data on position, catch and fishing effort; and
- implement and enforce measures through effective monitoring, control and surveillance (MCS).

The main national obligation is to require authorization for vessels flying the national flag to fish in the high seas. The flag State is also required to report position, catch and effort, in accordance with applicable standards; mark vessels; ensure MCS through various means such as satellite vessel monitoring systems; and ensure that its vessels do not engage in unauthorized fishing activities in other countries' waters.

In conjunction with the above convention, the Compliance Agreement, which was adopted by the FAO in November 1993, was ratified by Seychelles in March 2000. The Compliance Agreement is more concerned with fishing on the high seas, rather than highly migratory and straddling stocks. To conform to these Agreements, the Seychelles government enacted the Fisheries (Amendment) Act, 2000 and Fisheries (Amendment) Regulations, 2000. The Fisheries Act, 2000 and relating regulations give the Seychelles the necessary power to enforce UNCLOS to vessels flying its flag. This is an important step in ensuring Seychelles' responsibility towards its vessels fishing on the high sea and neighbouring EEZs. The regulations also prevent transshipment and landing of any fish that has been caught contrary to international management measures, which the Seychelles is bound by international agreement to respect (for example illegal landing of toothfish). The Seychelles is also implementing a satellite vessel monitoring system, which is an obligation towards MCS under UNCLOS. These, in effect, will allow the Seychelles to control any IUU of its fishing vessels and other vessels fishing in its waters.

In February 2001, the FAO finalized a draft International Plan of Action (IPOA) to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. However, this plan of action is voluntary and elaborated within the framework of the FAO Code of Conduct for Responsible Fisheries. The IPOA stressed that States should co-ordinate their activities and co-operate directly, and as appropriate, through relevant regional fisheries management organizations, in preventing, deterring and eliminating IUU fishing.

7 Conclusion

IUU fishing is an activity that undermines the fisheries management effort of a fishing nation, and the consequences are numerous. These can range from short- to long-term social and economic problems. The increase of IUU fishing activities in the western Indian Ocean over the past few years, especially with regard to the domestic fishing fleet, sends out a clear message to the neighbouring countries that steps should be taken to ensure that the coastal fishing nations take seriously their responsibilities for responsible fishing practices.

The international community is becoming increasingly concerned about illegal fishing, and international negotiation is under way to eliminate this regional and global problem. In this regard, the Seychelles has taken certain necessary steps to ensure that vessels flying its flag abide by national,

regional and international agreements to which it is party. It is believed that the Seychelles is a model for small island and coastal States in providing the institutional mechanism to prevent, deter and eliminate IUU fishing.

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Annex 1: Number of Contraventions Established in 10 Years by Enforcement

Date of Apprehension	Name of Vessel	Nationality	Offence
25.03.91	<i>Verano</i>	Korean	Illegal fishing
06.02.84	<i>Albacore Quince</i>	Spanish	Illegal Fishing
06.02.94	<i>Albacore Cuatro</i>	Spanish	Illegal Fishing
06.02.94	<i>Campolibre</i>	Spanish	Illegal Fishing
06.02.94	<i>Intertuna Dos</i>	Spanish	Illegal Fishing
06.02.94	<i>Montelape</i>	Spanish	Illegal Fishing
06.02.94	<i>Txori Berri</i>	Spanish	Illegal Fishing
06.02.94	<i>Montealegre</i>	Spanish	Illegal Fishing
26.07.94	<i>Hwa Jaan 16</i>	Taiwanese	Illegal Fishing
17.12.96	<i>Farn Shuen</i>	Taiwanese	Illegal Fishing
17.12.96	<i>Kao Hui</i>	Taiwanese	Illegal Fishing
04.04.97	<i>Hsing I Chang</i>	Taiwanese	Illegal Fishing
10.06.97	<i>Viking Swordfish</i>	Reuniones	Illegal Fishing
11.06.97	<i>Viking Swordfish</i>	Reuniones	Illegal Fishing
31.08.97	<i>Sea Horse</i>	Reuniones	Illegal Fishing
10.05.98	<i>Rukmar Dulaj</i>	Sri Lankan	Illegal Fishing
11.05.98	<i>Bahari Kencana</i>	Sri Lankan	Illegal Fishing
01.02.00	<i>Everfrost</i>	Indonesian	Illegal Fishing
07.02.00	<i>Lanka Matha</i>	Sri Lankan	Illegal Fishing
19.05.00	<i>Torrington</i>	Sri Lankan	Illegal Fishing
23.04.01	<i>Modell Majenga</i>	Malagasy	Illegal Fishing
23.04.01	<i>Ilse of Mahé II</i>	Seychellois	Illegal Fishing

Annex 2: Map of the Seychelles Main Fishing Grounds

Annex 3: Illegal Fishing Distribution between 1991 and 2001

Illegal Fishing in Seychelles

A. Napier *

Abstract

Seychelles has extensive pelagic marine resources and other specific species such as shark, demersal species, tow spotted red snappers, green jobfish, spankled emperor and grouper, not to mention an abundance of sea cucumbers that have not yet been exploited.

With an exclusive economic zone (EEZ) of 1.4 mn sq km making the ocean surface 3,019 times larger than the land area, it is not surprising that other foreign fishing vessels engage in illegal fishing in Seychelles' territorial waters, due to the absence of a relevant monitoring, control and surveillance (MCS) unit.

Keywords

Seychelles. Illegal fishing. IUU. Monitoring, control and surveillance. MCS. Seychelles Fishing Authority. Apostleship of the Sea. Seafarers.

1 Introduction

Seychelles consists of 115 islands, representing a total area of 443 sq km, with a combined coastline of more than 600 km. Its population of 80,000 is a mixture of people of African, European and Asian descent.

Seychelles has very few primary natural resources due to poor soil for agricultural development. The country's vast exclusive economic zone (EEZ), which covers an area of 1.4 mn sq km, is strategically located as one of the most productive fishing grounds in the southwest Indian Ocean. The majority of the population lives on the three main islands, namely, Mahè, Praslin and La Digue, which are of granite formation. The remaining islands and plateaux to the southwest of Mahè are all coralline in nature, including the Amirantes plateau, the Alphonse group, the Providence and Farquhar groups and the Adanra-Cosmoledo groups.

Fishing activities are entirely centred on the Mahè plateau and the Amirantes groups. The farthest distance Seychelles fishermen go is to the Providence and Farquhar groups, which are more than 700 km from Mahé.

Seychelles has extensive pelagic resources and other specific species such as shark, demersal species, tow spotted red snappers, green jobfish, spankled emperor and grouper, not to mention an abundance of sea cucumbers that have not yet been exploited.

With an EEZ of 1.4 mn sq km making the ocean surface 3,019 times larger than the land area, it is not surprising that other foreign fishing vessels engage in illegal fishing in Seychelles' territorial waters, due to the absence of a relevant monitoring, control and surveillance unit.

2 Illegal Fishing

Since 1984, fishing has been the second most important foreign income earner for Seychelles, after tourism. But recently, in 1998–2000, it has surpassed tourism to become the number one income earner of the country. Seychelles is a nation that consumes a lot of fish daily. Thanks to the private sector, the government and the local fishermen have together largely contributed towards the development of the fishing industry in Seychelles.

Fishing without a licence, or illegal fishing in the EEZ of Seychelles, has existed for many

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years since Seychelles was a colony under British rule. According to the Seychelles Fishing Authority records, it was only since 1991 that a number of foreign fishing vessels (Korean, Spanish, Taiwanese, French from Réunion Island and, lately, Sri Lankan and Malagasy) were seized for fishing inside the prohibited zone of Seychelles. The majority of the fishing vessels apprehended by the coastguard was first spotted and reported by local fishermen, fishing on the Mahé plateau. A number of those vessels, apart from the Sri Lankan and Malagasy ones, violated the Fisheries Act by fishing inside the EEZ. Those foreign fishing vessels were prosecuted in the Supreme Court, but most of them managed to get an out-of-court settlement or a fine of not less than Rs400,000 (US\$80,000).

3 Arrest of Sri Lankan Fishing Vessels

During 1997–2000, a number of Sri Lankan fishing vessels were captured and brought to the Supreme Court for illegal fishing in Seychelles' territorial waters and its EEZ. The following Sri Lankan fishing vessels were arrested in May 2000: *Sea Horse*, *Rukumar Dulaj*, *Everfrost 1*, *Lanka Matha* and *Torrington*.

In May 2001, a Malagasy fishing vessel, *Modell*, was arrested for illegal fishing of sea cucumbers in Seychelles' territorial waters. On board were 110 fishermen (drivers, cleaners, cook and mechanics). The captain and the chief engineer were charged and appeared before the Supreme Court. The case is still going on, though an out-of-court settlement is foreseen.

The number of the charges served on the accused captain varies between three and 10, depending on the entry in the navigation, fish logbook and diaries, which contain information related to the vessel's positions according to the Global Positioning System (GPS).

4 The Seychelles Fisheries Act

The captains of the aforementioned vessels were charged for contravening Section 24(1) of the Seychelles Fisheries Act (Cap.82) and Section 25 of the said Act as amended by the Fisheries Amendment Act No.3 of 1997, which states as follows:

Where any foreign fishing vessel that is not licensed in accordance with Section 7 or authorized under Section 17 is used for fishing in Seychelles' waters or for

fishing for sedentary species on the continental shelf, the operator and master shall each be guilty of offence and liable on conviction to a fine of Rs2,500,000 (US\$0.5 mn).

If found guilty, the court imposes a fine of Rs250,000 (US\$50,000) on each count, which is to be paid within three months, and for default of payment of fine, the convicts undergo six months of imprisonment. All fines and prison terms in default of fines are consecutive and not concurrent.

Rukumar Dalaj and *Torrington* are the only two Sri Lankan fishing vessels where everything on board (excluding the crew members) have been forfeited to the State, and which were later put up for sale to the general public, while the captains were sent to serve their sentences in a Seychelles prison, at Long Island, for failing to pay the fines.

As for the fishing vessel *Sea Horse*, the captain was fined US\$12,000. The vessel was allowed to depart Seychelles upon payment of the said fine.

Everfrost and *Lanka Matha* reached an out-of-court settlement of US\$25,000 per vessel, through the active participation of the Apostleship of the Sea AOS, the Foreign Affairs Ministry of both States and the Seychelles Fishing Authority. The fishing vessels were also released as part of the settlement.

5 Role of the Seychelles Apostleship of the Sea

The main task of the AOS is to ensure the well-being of those who are far from home, to encourage, initiate, provide for and, as the occasion demands, moderate and co-ordinate activities, relations and meetings of an international nature on the norms for the care of seafarers and others travelling by sea.

Struggling against injustice is an important part of the AOS work. We are not a trade union organization, a policymaker or a pressure group, but we do negotiate, and stand for, human rights and for fairness, believing that one is always "innocent until proven guilty".

6 Actions Taken

The Seychelles AOS, which is responsible for helping seafarers in case of difficulties, social problems and police cases, does intervene in the following manner:

- Establish contact with the authorities concerned, like the Seychelles Coastguard, Seychelles Fishing Authority, Port Authority, the Criminal Investigation Department, etc.
- Collect information on, and inquire about, charges, names of the captain and crew members involved.
- Contact Sri Lankan nationals residing in Seychelles for translation from the Sinhala language into English and vice versa; request their financial contributions for legal aid, food, clothing, etc.
- Request authorization to visit the captain and his crew while in detention at the coastguard barracks, or on their fishing boat.
- Make frequent visits to collect identification cards, papers and travel documents, to see to the detainees' actual needs, get their dependents' addresses in Sri Lanka and give them moral support in their ordeal.
- Contact and report the issues on a three-day or weekly basis to the authorities of the Church, requesting for assistance with food, clothes, communication equipments and other basic necessities.
- Contact the agents of the boatowners in Sri Lanka in order to assist by either visiting the detainees in Seychelles, discussing with the Seychelles authority, and/or paying for legal aid and a fair trial.
- Write articles in the local newspapers on the arrest, prosecution and outcome of the Supreme Court judgements and, at the same time, develop constant contact with the regional co-ordinator of the Apostleship of the Sea for the Indian Ocean and southeast Africa for assistance.
- Request the Bishop to write to the President of the Republic asking for clemency and for a quick settlement of the case, in favour of the captains and their families, who are in a very needy situation. In the case of two Sri Lankan captains, sentenced to a prison term, which they served for some months, clemency was granted, while, in the Malagasy case, we are still waiting for an out-of-court settlement.

7 Difficulties Encountered

The main difficulties encountered were with the 'boatowners' of the *Torrington* and *Rukumar Dajal*, who refused to assist or contribute towards the captain and the crew's efforts. The crew was left to face their difficulties themselves in an unknown country. It is unbelievable that a seaman does not possess an identification paper or travel documents. The absence of identification papers really complicates the issue of repatriation of the crew.

8 Main Problems Facing the Detained Fishermen

The majority of the abovementioned captains and crew of the fishing vessels arrested for illegal fishing in Seychelles' territorial waters have been well treated by the authorities and the Seychellois, in general. So far, there has been no report of them being harassed, beaten, tortured or made to give their statements to the police under duress. They remain in detention on board their fishing vessels, where they are allowed to move around freely.

During the captains' trials, which sometimes lasts for months, the detainees are assisted by the authorities, the Seychelles Apostleship of the Sea, the Red Cross and Caritas of Seychelles, which help with medical treatment, clothes, food, writing materials, etc.

The detainees do suffer from language barriers and the absence of legal aid. They face the problem of not knowing whom to trust. Boredom and loneliness mark their faces, especially when they think of their families or when they receive news from their families and loved ones. They feel abandoned in a foreign country, especially when the boatowner refuses to assist and repatriate them.

9 Suggestions

Financial and manpower constraints and lack of inter-departmental co-ordination are the main relevant factors that hinder the monitoring, control and surveillance of foreign fishing vessels, fishing illegally in Seychelles' EEZ. In order to counter these setbacks, I believe that the following could contribute towards the management of our resources and help reduce illegal fishing in Seychelles territorial waters.

At the local level, we need to:

- have more trained personnel and sufficient boats to carry out patrols and enforcement

duties; (The government cannot depend on donations of patrol boats from foreign countries. The purchase of modern patrol boats should figure in its budget.)

- create a monitoring depot on an outlying island, for example, Ascension Island, to enforce surveillance of foreign fishing vessels;
- have an independent judicial system that is not influenced by government authorities and/or para-State officials; and
- build a seafarers centre to cater to, assist and accommodate, stranded seafarers until their repatriation.

At the regional level, Seychelles is a member of the following regional organizations or commissions:

- the South West Indian Ocean Fishery Commission, which deals mostly with the management of demersal stocks;
- the Indian Ocean Commission, which is concerned with the marine environment;
- the Indian Ocean Tuna Commission (IOTC), which deals with the management of tuna stocks; and
- the Western Indian Ocean Commission, the Common Market for Eastern and Southern Africa (COMESA), the Southern African Development Community (SADC), the Indian Ocean Rim Association for Regional Cooperation (IOR-ARC).

Within these regional bodies, Seychelles can establish a number of common agreements with States that are involved in illegal fishing within its territorial waters. For example, Seychelles can:

- establish a regional fisheries law enforcement resource, whereby those arrested for illegal fishing in one State can be repatriated to their homeland to serve their prison sentences;
- establish a subsidiary arrangement to enable co-operation, legislation and information of fishing activities within the region;
- request other countries to assist in enforcing surveillance and fishing laws, etc. and to educate fishermen of the dangers of illegal fishing;

- make port States responsible for ensuring that detained fishermen have decent living conditions and access to national legal systems; and
- make boatowners responsible, and liable, for their actions, especially when they abandon their crew members without caring for their welfare and their repatriation, in clear violation of their basic human rights.

Illegal fishing is a violation by other nations of the national law of a country, which must be severely condemned because it destroys the national resources of a nation. There are also a lot of complications in dealing with fishing vessels arrested for such violations. Most important of all, it causes great psychological and moral suffering for the crew and for the families they have left behind to earn a living.

A memorandum of understanding was reached between the Government of Seychelles and the Socialist Democratic Republic of Sri Lanka, which was signed and approved by both parties on 2 April 2001.

10 Conclusions

To conclude, may I read a letter addressed to Bishop Xavier Baronnet of the Diocese of Seychelles, by Captain Sunil Fernando, who had served several months in a Seychelles prison for illegal fishing but was granted clemency by the President, through the intervention of the Apostleship of the Sea:

Rev. Archbishop,

I am a poor fisherman. I have nobody to visit me at the prison. I am in a helpless situation. I ask you to get me any kind of help. I have no income. My only income was from fishing. I have two daughters, 8 years and 9 years old. My wife has no job and no income.

I am the only breadwinner in the family. When I left home, there was a lot of trouble there because of witchcraft. The reverend father of our church had gone there for prayers and blessings. I have no proper house to live in. I have only a small hut to live in.

I borrowed some money from a bank, keeping the land as security. I have to pay Rs3,000 a month to the bank. I fear that the bank has already taken the land

because I couldn't pay them for the last few months.

I am doing this job because I am very poor. I am not a drug dealer, not a murderer, not a thief. I came to fishing because there was nothing else for me to do to feed my family.

Please write to the President and get me any kind of relief. If there are mistakes in this letter, please forgive me. I have studied only up to year 3 in school.

After reading this, please get me some relief.

Sunil 23.9.00

Threats to the Natural Resources of Small-scale Fishermen of North Sulawesi

Ronald Z. Titahelu *

Abstract

Indonesian small-scale fishermen, who live along the coast and on the small islands, are not automatically guaranteed a prosperous life. This is because they often lack the technology or the capacity to maintain the quality of the environment.

In some places, there are activities that help the small-scale fishermen to empower community and build capacity. In general, though, Indonesia's small-scale fisher communities need a new strategy to strengthen their position.

Keywords

Indonesia. North Sulawesi Provincial Government. Traditional communities. Local communities. Decentralization. Democratization. Empowerment. Capacity building. Community-based natural resources management. Military co-operatives. Stakeholder.

1 Introduction

The archipelagic State of Indonesia comprises of 0.3 mn sq km of sea, 2.8 mn sq km of inshore waters and an additional 2.7 mn sq km of an exclusive economic zone (EEZ), rich with various coastal and marine natural resources.

But these conditions do not automatically guarantee a prosperous life for the small-scale fishermen who live along the coast and on the small islands. This is because they often lack the technology or the capacity needed to maintain the quality of the environment.

The Government of Indonesia agrees that protection and management of coastal and marine resources is very important, and so it has embarked on a strategy to:

1. establish policies to sustain coastal and marine resources, especially for small-scale fisher communities;
2. strengthen fishery regulations;
3. decrease wastes from catching, handling and processing fish; and

4. curtail the catching of certain species of fish.

Until recently, a structural imbalance in the community, hailing from feudal and colonial times, existed. The existence of several acts, like the Foreign Investment Act, the Mining Act, the Transmigration Act, the Irrigation Act and the Fishery Act, tends towards a centralization of power.

According to the Fishery Directorate General of the Republic of Indonesia Marine and Fishery Affairs Department, fishing vessels that do not use outboard motors, or that use a low-horsepower outboard motor are classified as belonging to the small-scale fishery, and they comprise 80 per cent of the total fishing vessels in Indonesia. The rest consists of vessels of at least 30 gross registered tonnage (GRT), which use inboard motors.

The North Sulawesi Provincial Government has tried to empower the small-scale fishermen by training and aid. But, in reality, the small-scale fishermen are restricted to a territory not more than 6 nautical miles, while foreign vessels are permitted to enter up to 12 nautical miles, until the EEZ. The role of the military, particularly the army and the navy, in catching fish is very strong. Several fishing enterprises belong to military co-operatives and

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operate fishing vessels of over 30 GRT in huge numbers spread throughout the whole of the Indonesian marine territory.

Article 33, Section 3 of the Indonesian Constitution of 1945, states: "The terrestrial, water and natural resources inside belong to the State and should be used for the benefits of the greatest welfare of the people." Although the Ministry of Marine and Fishery Affairs Department recognizes the right of traditional communities to the coastal and marine territories, in fact, the Act Number 22/1999 about Regional Government does not recognize the rights and obligations of the customary communities or local communities to the coastal and marine territories and the natural resources within them.

The local government's weakness in decentralizing and democratizing coastal and marine natural resources is also one reason for the suffering of the small-scale fishermen. After the implementation of Act Number 22/1999 about Regional Development, the small-scale fishermen were restricted by the administration from decentralization of power. In some places, conflicts among small-scale fisher communities in several villages have occurred.

2 A New Strategy

Indonesia's small-scale fisher communities need a new strategy to strengthen their positions. In some

places, there are activities for the small-scale fishermen community to empower community and build capacity.

Community-based natural resources management, which includes community-based marine and coastal resources management, is very important to enhance the prosperity of those whose lives depend upon coastal and marine resources.

The Indonesian Navy should implement its duty to protect the territory from fish poaching or illegal activities. The military's role in economic activity, especially on marine natural resources management, must be stopped immediately.

The government must recognize and guarantee small-scale fishermen full access to natural resources, especially to coastal and marine natural resources, so that they can use these resources to increase their prosperity.

The fishermen must have direct access to politicians. Members of parliament must create and build a significant relationship with small-scale fishers' groups. The local government must have a strong commitment to implement the decentralization and democratization of coastal and marine natural resources.

Since the struggle is not waged by the small-scale fishermen community in local places alone, but by several small-scale fishermen in many places, they need strong alliances or networking with other stakeholder groups that have deep concerns for their needs and opportunities.

The Demise of the Traditional Fisher Peoples

*Andrew Johnston **

Abstract

Even as large amounts are spent on defending failed policies and management systems that promote unsustainable fisheries, the plight and existence of the artisanal/traditional fishers and the fish resources are being ignored. This is especially true around the west coast of Africa and within the Indian Ocean and its surroundings. Sharks, swordfish, abalone, orange roughy, patagonia toothfish, bluefin tuna and turtles are among the species that are being indiscriminately harvested. Further, in South Africa, the Indian Ocean islands and Kenya, rapid and irresponsible coastal development has resulted in an accelerated rate of environmental degradation and habitat loss.

Keywords

South Africa. Mauritius. Port Louis. Cape Town. Traditional fishers. Sustainable fisheries.

The Indian Ocean is the third largest ocean in the world, with the bulk of the supply for domestic consumption of fish coming from the traditional/artisanal fishers. Fish is the most vital source of cheap protein, contributing essential minerals and vitamins to the most vulnerable people of the poorer coastal communities. The existence and plight of the artisanal/traditional fishers and fish resources are being ignored, while large funds are spent on defending failed policies and management systems that promote unsustainable fisheries. Treaties and agreements are ignored and conferences that attempt to resolve these issues and take necessary steps to protect and promote sustainable fisheries and the communities dependent upon them are boycotted by countries embracing industrialization.

The global destruction of our ocean's waters and marine life is especially notorious around the west coast of Africa and within the Indian Ocean and its surroundings. Overfishing and environmental degradation are quickly depleting our fish stocks. Shark, swordfish, abalone, orange roughy, patagonia toothfish, bluefin tuna and turtles are just some of the species that are being harvested in prolific quantities, and with reckless abandon. In the southern seas, plundering by pirate fishing

vessels has escalated, with the full knowledge and support of some the Indian Ocean countries. Port Louis (Mauritius) and Cape Town (South Africa) have become eminent bases for chemical pollution, with the ocean being regarded as a trash bin for the dumping of all sorts of harmful waste. We are not only destroying the earth's life support systems, and the precious resources within, but the rich cultural heritage, and livelihood of innumerable communities that are dependent on the oceans.

A grave tragedy is unfolding as so-called 'developed' countries attempt to transform the traditional/artisanal fisher peoples into a corporate society. Industrial profiteers and governments continue to promote the concept that developing countries must evolve into developed nations.

With the exception of a few urban areas, the coast of east Africa is not densely populated. However, in South Africa, the Indian Ocean islands and Kenya, rapid and irresponsible coastal development to serve tourism and local clients has resulted in an accelerated rate of environmental degradation and habitat loss. Food security is threatened to the extent that most of the African, Caribbean and Pacific peoples' supply of fish, the basic staple food and source of nutrition, is now unavailable for local consumption but is destined for the palates of the

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peoples of the rich nations of the North. Policies ignore social issues, but focus, instead, on production for economic growth, the primary concern being to promote industrial fisheries.

Very little of the profits and foreign exchange generated by fish export markets benefit the local fishers and fishing communities. The structure of the fishing operations required to compete internally excludes and marginalizes the small-scale fishing sector. In South Africa, the artisanal/traditional fishers are not accommodated as a sector within its fishing acts, and there is no

meaningful participation or involvement by this group in decisionmaking and implementation of fisheries management.

A government that shows no respect for the environment will show even less respect for its fellow human beings. Now is the time, before it is too late, to stand together as concerned people and demand governments to change global economic rules, defend and promote sustainable fisheries, avoid environmental degradation, safeguard the rights of small-scale fishers, and protect marine resources for the future benefit of humankind.



Dilemma of Small-scale Fishers at the Dawn of Industrial Fishing in Kenya

*S. Mucai Muchiri **

Abstract

People of the Kenyan coast have lived off the Indian Ocean for centuries. Folklore and legend reflect a history of dependence on the sea and fisheries for livelihood. Due to technological limitations and small human populations, harvesting from the sea had little effect in the past. Fishermen relied on simple fishing gear, operated either from the shore or from dugout and small planked canoes to supply the needs of their families.

In the past three decades, human populations have increased tremendously, leading to greater demand for marine fisheries products. The introduction of a cash economy has also triggered the need for more efficient methods of fish capture to meet the new and growing demand. Unfortunately, local fishers have not been able to participate effectively in supplying this new demand. The main reason for this handicap is their inability to keep pace with rapidly developing fishing technology.

The introduction of mechanized fishing by 'outsiders' has been seen by some members of the local communities as a boon, in the sense that more employment opportunities have been created. This paper argues that mechanized fishers are able to exploit areas of the sea that local fishers are unable to venture into.

On the other hand, mechanized fishers, especially those who operate trawlers, have often been accused of overexploitation of the resource, to a point that certain species cherished by local communities have disappeared altogether. Trawler operators have also been blamed for the destruction of small-scale fishermen's gear, leading to huge losses.

This paper discusses the difficulties that communities of the Kenyan coast face with the introduction of mechanized fishing. It also describes an ongoing initiative to resolve the mounting conflicts in the marine fisheries of Kenya.

Keywords

Kenya. Mechanized fishing. Prawn fishery. Surveillance. Natural resource management.

1 Introduction

Global economic trends indicate an ever-increasing gap between the industrialized nations and the so-called developing world. The uneven trend of development was demonstrated vividly by the United Nations Development Programme (UNDP) in its annual report of 1992. The report demonstrated the inequalities with the help of a funnel graphic indicating that 20 per cent of the world's population utilized some 85 per cent of global resources, leaving 15 per cent to be shared by the re-

maining 80 per cent of the population. Since 1992, this trend has only worsened.

In many developing countries, particularly in Africa, local situations reflect these global trends. The rich become even richer as they benefit from more and more of the available resources, while the poor become poorer as they access less and less of the resources. This inequality constitutes the main developmental and ecological problem. The dilemma for the poor, however, is the ever-lingering hope (often futile) that industrialization and an increase in the 'riches' in their locality

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would improve their livelihoods through some of the benefits flowing their way.

This paper analyzes the fisheries of the Kenyan coast to illustrate the foregoing inference. It describes the attitudes of small-scale fishers towards the large mechanized fishery (particularly, shrimp trawlers), and some of the efforts being made to address conflicts that have developed between the two sectors.

2 A Historical Background

Kenya's coastal peoples have lived off the Indian Ocean for their livelihoods for a long time. Folklore, legend and written history tell of a people with a close dependence on the sea for their livelihoods and food. Today, as in the past, marine fisheries in Kenya is mainly artisanal, relying on simple fishing gear operated either from the shore or from small non-motorized boats. This technological constraint limits fishing operations to within the shallow reef. Fishing gear include gillnets, cast-nets, seine-nets, handlines and traps. Since the late 1970s, new players have come in with more effective fishing technology that utilizes larger gear, such as trawl nets and purse-seines, from much larger vessels. Longlines are also used for fishing in the deeper offshore waters of the exclusive economic zone (EEZ).

It is estimated that there are about 5,000 coastal fishers in Kenya, 4,000 of whom are artisanal, and a total of about 40,000 people dependent directly on fish production. With the introduction of a cash economy, it is not always possible to distinguish catch meant purely for home consumption from catch meant for sale. However, all artisanal fishermen take home part of their catch for food.

The increase in the coastal human population from fewer than 500,000 in the 1970s to more than 2 mn today, coupled with new patterns of consumption, has led to greater demand for marine fisheries products. There are more local people to feed, while tourist hotels and the export markets have raised the demand for certain species such as prawns. This increased demand for marine fisheries products meant that fishing technology needed to improve to increase supply. It was at this point that the larger, more effective fishing vessels were introduced. The trawlers target mainly prawns, while purse-seiners catch finfish. With the decline of the targeted species, by-catch has recently become a very important part of the prawn trawler fisheries.

Due to the limited financial resources at the disposal of local fishing communities, their participation in industrial fishing has been confined to joint ventures, with minority shareholding and virtually no control. Most of the large vessels are owned and operated by peoples of European origin (at present, mostly Greeks and Italian), with the involvement of some rich, politically well-connected local inland and coastal partners.

The industrial fishers were required by law to fish beyond 5 nautical miles from the shoreline, leaving the more shallow, nearshore fishing grounds to artisanal fishers. In practice, however, the larger vessels are commonly seen fishing within the prohibited grounds, leading to major conflicts with the small-scale fishers and causing serious damage to the environment.

3 Dilemma for the Kenyan Coastal Fishing Communities

In a series of stakeholder meetings, held between September 2000 and March 2001, it became evident that conflicts exist, particularly between the prawn trawlers and the small-scale fishers of the Kenyan coast. It was also clear that some members of the local communities are more tolerant of industrial fishing. The latter group (led, not surprisingly, by elected co-operative officials) argues that the entry of industrial fishing is justified for several reasons.

The main reasons put forth are:

1. Artisanal fishers are unable to venture into the deeper waters offshore and, therefore, with the liberalization of the Kenyan economy, those areas should be open to those who have the means.
2. The larger capacities of the industrial fishing vessels provide additional opportunities for employment.
3. More fishing activities lead to increased local trade.
4. There exists a Kenyan cultural norm of hospitality to visitors.

It should be noted that this particular section of the fishing community supports industrial fishing because of their own liaison with the large-scale fishers.

On the other hand, there is a long list of grievances raised by the communities involved in the fishing industry. The set-gear are wantonly destroyed by the large vessels, either during their

fishing operations or in transit to and from fishing grounds. The question of fishing gear damage by trawlers and compensation claims is complex, as it is not always easy to provide proof or evidence to incriminate the culprits. In certain instances, the claims appear overpriced, and are perhaps aimed at getting compensations large enough to finance the purchase of new gear. A mechanism needs to be put in place that would clearly provide for resolution of gear damage claims.

Operations of prawn trawlers in the shallow in-shore areas of the reef cause a great deal of damage to the environment, and thus affects the integrity of finfish breeding grounds. It has also been observed that large amounts of non-target fish are caught and discarded. Many of such fish are juveniles of species that are valuable as adults in directed fisheries. In this way, certain species of fish that were previously common in the catch have become rare or virtually extinct.

Large-scale fishing operations provide larger amounts of fish, often of higher quality than those provided by the small-scale fishers. As a result, small-scale fishers are unable to compete favourably in the marketing of their catch, particularly in the more lucrative niche markets for tourist hotels and the export trade.

At the stakeholder meetings, it became evident that though they have, in the past, looked to the government to provide solutions for problems that afflict them, the small-scale fishers have received little support. This state of affairs has led to frustration and a loss of self-esteem among the small-scale fishers.

4 Recent Efforts to Resolve the Conflicts

The stakeholder consultative meetings that were held in late 2000 and early 2001 comprised a positive reaction by the government to the agitation by the small-scale fishers and their dependents affected by industrial fishing activities. Complaints and demonstrations featured in public meetings and were covered by the press. The gravity of the matter at hand was emphasized by the fact that the meetings were chaired by the Permanent Secretary (the chief technical officer) in the ministry responsible for fisheries. Present at the meetings were fishing community leaders and representative fishermen, representatives of the industrial fishers, environmental pressure groups and officials of various

government departments with interest in the marine resources.

During the first stakeholder meeting on 27 September 2000, a wide range of issues of concern was raised. Conflicts arising from prawn trawling was identified as the most pressing issue. A task force was appointed to identify such conflicts and to make recommendations to a second stakeholder meeting. The task force made up of representatives of various interest groups, including fishers, held several meetings to develop recommendations for the next, larger meeting. In the meantime, all trawling activities were suspended, until those recommendations were discussed and resolutions passed.

The second stakeholder meeting, held on 15 March 2001, passed the following resolutions :

1. Research needs to be carried out to establish the current status of the marine resources (particularly of prawns). It was noted that the last survey (an FAO-funded one) to assess prawn stocks was done in 1982. Therefore, it was difficult to effectively assess the viability of the present stocks for commercial exploitation. This resolution required that the survey (a) establish the current population structures and distribution of prawns; (b) assess the level of environmental damage by prawn trawlers; and (c) evaluate the economic viability of the prawn fishery.
2. To facilitate research activities, commercial trawlers should be allowed to operate under special licences, with strict guidelines. Research scientists should be accommodated on board the trawlers to collect data as commercial fishing takes place.
3. Clear fishing zones and fishing seasons should be established. The present law provides for trawling only beyond 5 nautical miles from the shore for an unlimited time. Industrial fishers admitted that they fished within the 5 nautical mile limit as it was not economical to fish in the deeper waters.
4. Limit number and capacity of fishing vessels. It was agreed that the number of trawlers allowed to fish in Kenyan waters be limited to the four vessels at present registered with the Fisheries Department.
5. Provide for observers to be on board all the fishing vessels, as a means to monitoring the fishery.

6. All trawl nets should be fitted with turtle excluder devices. This was consequent to the observation that, through their fishing operations, both trawlers and small-scale fishers are responsible for the present decline in the population of marine turtles.
7. Effective surveillance and enforcement mechanisms must be developed. It was noted that all the efforts made would be futile if the fishing regulations and guidelines were not strictly enforced. The fisheries department admitted its limitation in carrying out effective surveillance, for want of patrol boats and adequate staff.

5 Future Prospects

The excessive uses of natural resources eventually exerts a strain on the available resources. The strain is felt more and more as the resource diminishes and becomes scarce. Scarcity inevitably leads to competition and, ultimately, conflicts, as users attempt to maintain, or even increase, their own use of the resource to satisfy their perceived needs and wants. This then raises the crucial questions of allocation. How much is available? Who gets what? Who gets preference?

The case we have at hand in Kenya is one of a strained natural resource, a resource that has, in the past, provided a means of living to various groups of people, though not in exactly the same way. But now it is obvious that there are serious conflicts resulting from a diminished resource. Unfortunately, we do not even know exactly how much of the resource is left, in order to make a sensible judgement on allocation.

Technical knowledge is required for guiding the processes of planning and managing natural resources. This does, in fact, underline the correctness and importance of the first resolution by the stakeholders' meeting—that a survey be carried out to establish the current status of the marine fisheries stock. Stock surveys should be a continuous monitoring process by which danger signals can be detected in good time.

The question of how much is allocated to each group, and what priorities ought to be set, can only be answered effectively by establishing ownership of the resource. All the stakeholders would then collectively decide on the allocation and management of the resource. The stakeholder meetings were an important means towards empowering the coastal fishing communities to voice their concerns and aspirations, and to provide them the chance to get involved in managing the marine fisheries resources.

Conventionally, the government has been the sole player in the management of natural resources. The current involvement of communities in decisionmaking requires that the government supports and encourages the development of strong community leadership. This may involve relinquishing much of decision-making powers to the communities. The role of government would then remain one of support and guidance in the planning and management process. The government would provide the framework by which the resources should be managed.

Surveillance is the crucial part of natural resource management. Compliance with, or enforcement of, regulations has to be a joint effort between resource users and the governing authority. Successful natural resource management is much easier to achieve where there is a strong sense of ownership leading to user compliance. Where compliance is weak, enforcement of regulations must be effected.

In the case of Kenya's coastal fisheries, the situation remains generally unchanged. The trawlers are still fishing nearshore and the conflicts are still real. To achieve positive results from the present initiative to remove conflicts, it is required that the government be forceful in ensuring compliance with all resolutions and enacted regulations. There is such a great deal of goodwill from most resource users that this is the opportune time to turn around the management of Kenya's coastal fisheries to provide for equitable and sustainable use of the resource.

What Does the Future Hold for Malagasy Coastal Communities? The Role of Traditional Fisheries

*Felix Randrianasoavina **

Abstract

Traditional fisheries in Madagascar provide the main source of livelihood for over 100,000 fishermen from 1,250 communities along 5,000 km of coast. The fishery provides 50 per cent of the Malagasy fish catch and supplies 70 per cent of the fish locally consumed. Despite this, the sector is not recognized officially, and has been marginalized from mainstream national economic development. Since 1995, a group of Malagasy non-governmental organizations (NGOs), supported by European NGOs, have been drawing public attention—both locally and internationally—to this situation. Over the last six years, they have studied and documented the traditional sector, organized formal meetings between representatives from traditional fishing communities and policymakers, and lobbied the Malagasy government and European Union (EU) Member States to include traditional fisheries in their development initiatives.

Keywords

Madagascar. Traditional Malagasy fisheries. EU. Shrimp. Apostolate of the Sea. Madagascar Marine Programme. Collective of Malagasy Maritime Organizations. CCFD. EU-Madagascar Tuna Fisheries Agreement. CFFA.

1 Introduction

It is undeniable that Madagascar, a large island of 587,000 sq km and a population of around 14 mn people, is a maritime power to reckon with. It possesses a coastline of 5,000 km, and a 200-mile exclusive economic zone (EEZ), despite legal disputes with France over the sovereignty of three islands scattered in the Mozambique Channel. However, the national maritime prospects are very bleak: the port infrastructure is in a state of abandonment; and Malagasy shipping companies are disappearing to the benefit of the insurers of foreign fleets. In a few years, faced with modernization and globalization, Malagasy ports are at risk of falling into marginal use in the southwest region of the Indian Ocean.

By contrast, Malagasies see the industrial fisheries sector as the new 'El Dorado'. Malagasy fishery resources, unevaluated but with real potential, are coveted by industrial companies. For the most part, these are Malagasy-registered, but foreign-

owned, employing mainly expatriate staff. The growing value of shrimp is reflected in the willingness of the government to categorize this 'pink gold' as a strategic resource of national importance.

Faced with an expanding shrimp fishery and with all kinds of demands from the industrial sector, traditional fisheries, time-bound and never benefiting from any technical development, are relegated to second place. This sector is in danger of disappearing, leaving destitute the fishing populations in the 1,250 officially registered villages, where agriculture is not possible. It could even be said that the sector is hostage to ignorance, unknown in the mainstream economic development of the fishery. What hope is there for the future?

2 Gaining Organizational Momentum

Modelled on French law, Malagasy law encourages associations to become formalized. Since the country's independence in 1960, several kinds of organi-

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zations have sprung up and multiplied, including associations, unions, co-operatives and NGOs.

In the maritime sector, organizations were first initiated towards the end of the 1970s and the beginning of the 1980s. The country's isolation was not seen as a constraint, and it was felt that there was little to worry about in the maritime sector. At around this time, thanks to initiatives of the Apostolate of the Sea, little by little, an organizational movement in the maritime sector was developed in all its multiplicity and diversity. During this process, it was seen fit to regroup these efforts into a national-level platform. Thus, the Madagascar Marine Programme (PMM) was born, but, now living on borrowed time and facing a complex situation, it is being used to hoodwink the unsuspecting. Towards the end of 1999, and due to an urgent need to monitor and co-ordinate ongoing initiatives in the Malagasy maritime sector, the Collective of Malagasy Maritime Organizations (COMM) came into being. This initiative was taken by people close to the Apostolate of the Sea and the PMM.

Such a monitoring and co-ordination effort was deemed necessary because both in the merchant maritime sector and in the fisheries sector, thanks to support from foreign partners, several initiatives were being taken countrywide, around the coasts. These initiatives count on the strong support of the seafarers and fishworkers to establish common objectives that will promote national solidarity, and, over time, develop a Malagasy maritime sector.

At this point, a brief summary of the story so far, to clarify the roles played by the respective organizations, would be useful. The Apostolate of the Sea is a branch of the Roman Catholic Church, with its headquarters in Rome. It works for the well-being of seafarers. It has established itself in the main coastal centres of Madagascar, and its various initiatives have led to the creation of organizational movements and platforms for the representatives of various segments of the merchant maritime and fisheries sectors. In 1993, in partnership with the French NGO, the Catholic Committee for Freedom from Hunger and Development (CCFD), various Malagasy organizations from the traditional and artisanal fisheries sectors formed a national-level grouping called the Christian Federation of Artisanal Fishermen of Madagascar (FECPAMA). Likewise, organizations of seafarers from the merchant marine sector formed another national-level body called the Christian Federation of Malagasy Seafarers (FECMAMA).

Another initiative in January 1995, in partnership with CCFD, gave birth to the PMM, providing a

new national platform and a voice for all the groups of maritime-sector federations. At the beginning of 1998, the scope of the EU-Madagascar Tuna Fisheries Agreement was considerably widened. During the negotiations for the renewal of this agreement, a number of joint initiatives were taken by CCFD and the Coalition for Fair Fisheries Arrangements (CFFA) in support of various local-level actions in Madagascar. These included awareness-raising and campaigning among fishworker communities, facilitated and conducted by the different networks associated with the Apostolate of the Sea and FECPAMA.

It was also during this time that a workshop on the future of traditional fisheries in Madagascar was organized to provide a voice to the fishworkers themselves. Unfortunately, after the initiative was launched, PMM was unable to see through its commitments due to administrative problems. Thanks to the joint efforts of local organizations with their foreign partners (CCFD and CFFA), the workshop took place, and led to the formation of COMM.

COMM is a new national-level institution, comprising 28 associations or groupings of seafarers and fishworkers dispersed across the large island. As its name implies, COMM is a genuine collective, directed by a Maritime Council that represents its constituents. It has the following long-term objectives:

- to raise public awareness about conditions in the maritime sector;
- to encourage associations and groupings of seafarers to be aware of their rights and responsibilities;
- to establish a shared communication to foster improved understanding of the needs expressed by the maritime profession, thereby enabling them to participate fully in the development of their sector; and
- to foster support for associations and groupings of seafarers, industrial fishery workers, traditional fishworkers and coastal communities, and, eventually, dockers and the families of seafarers.

COMM's purpose is to represent and promote, to train and inform, and to support and encourage working relations between organizations of workers in the merchant maritime and fishery sectors.

COMM's assistance is available to all the bodies working to promote the maritime sector, regardless

of race, religion, or political persuasion. Such a collective effort is necessary in the context of 'globalization', and, given the realities we face, to succeed, we must act together.

Of course, there is a strong connection between those with power and means enabling the advancement of those without. But COMM's objectives are rooted in the development priorities of the seafarers at both local and national levels, taking into account changes at the international level, and the hazards and consequences of globalization.

To this end, concrete actions, particularly in the area of traditional fisheries, are being undertaken, which have enabled some breakthroughs to be made in raising awareness at the national level.

3 The First Steps Along the Road

The start of fishery agreement negotiations between the European Union (EU) and Madagascar towards signing a new protocol is what first triggered the Malagasy traditional fishing sector to voice its concerns and to make itself heard.

In 1995, the first phase in the large-scale mobilization of traditional fishworkers was undertaken in the framework of the renewal of the fourth tuna agreement between the EU and Madagascar. In the various discussions, organized both in the coastal provinces and in the Malagasy capital, two important issues were taken up as core themes:

- First of all, the fishworkers' image of the fishery resources is one where big fish feed on small fry. But they also know that a mass of small fish can swallow up the big fish.
- Secondly, they established the following position: "We feel that the country should be developed by Malagasies, for Malagasies. But that won't be achieved in a day! But shall we make a start? Aren't our officials essentially economic managers of the resource, leaving the human resources idle, to be exploited by foreigners?" Recognizing this was the call that awoke the Malagasy traditional sector.

As noted above, mobilization on this large scale was facilitated through improvements in the organizational environment and structure and thanks to the support provided by a number of the aforementioned organizations. A synergy was thus created between national Malagasy organizations and foreign partners. From then on, it became easier to move things forward together, focusing on precise objectives.

In 1998, a joint mission of the Brussels-based CFFA and the French NGO, CCFD focused on the need for the traditional Malagasy fishing sector to be recognized. The first signs of this were noticed in the context of the fisheries agreement due to be signed by the two parties. Thus, it is worth noting that, for the first time, the fifth EU-Madagascar Tuna Fisheries Agreement (approved in Brussels on 8 June 1998) stipulated that part of the financial compensation of the agreement amounting to 125,000 ECU (some 750 million Malagasy francs) was to be allocated to the development of traditional fisheries. It was also noted that unless a workshop was organized to consult with the fishworkers themselves, it would be almost impossible to decide what this amount should be used for.

In 1999, a workshop for fishworkers was organized in Amborovy-Majunga (17 to 22 May) on "What Does the Future Hold for Traditional Malagasy Fisheries?". Specialists from the Malagasy Ministry of Fisheries and Fishery Resources participated in this workshop. A 'Fishworkers' Statement' supported by 'Recommendations' with 20 fundamental points were produced. These covered four main areas:

- Materials and ownership of vessels;
- Production, processing and preservation;
- Trade and markets; and
- The role of women in collection and marketing.

Up to this stage, as mentioned above, it had always been the PMM that had guided the processes.

In 2000, at an important first meeting of fishworkers in Majunga, COMM, in partnership with CFFA, CCFD and ICSF, took up the initiative by organizing a debate on the "Problematic of the Zone Reserved for Small-scale Fishing". A meeting was then organized in Toamasina (25 to 28 August), attended by specialists from the Malagasy Ministry of Fisheries and Fishery Resources. The fishworker representatives validated the results of a survey carried out in nine sites selected as representative of their sector. The event enabled them to confirm that "traditional Malagasy fisheries are alive and well, but they are fragile and vulnerable".

The meeting focused on these main questions:

- How to define the sector?
- Who is considered a traditional fisherman?

- What criteria are recognized by the fishermen themselves to qualify as a 'traditional' fisherman?

The majority of fishworkers interviewed came from fishing families, where fishing was their main source of livelihood. The use of special fishing gear, and the observance of family traditions, restrictions and taboos were also seen as important and common elements.

The sector was also seen as highly vulnerable:

- traditional fishing gear and boats are vulnerable to bad weather, and collisions (especially with industrial fishing boats);
- traditional fishing communities are vulnerable and at risk in the face of competition from other activities (industrial aquaculture, different types of pollution in the coastal area);
- the fishery resources on which traditional fishermen depend are highly vulnerable to overexploitation of the coastal areas. This could put the very survival of families and communities living along the coast at risk;
- how to get the sector formally recognized by the public authorities (representation at national level, actions by public authorities, census, taxation, subsidies, etc.).

Lack of official recognition of traditional fisheries by the administrative and political authorities was seen as a major constraint. However, representatives of national authorities present did acknowledge that "traditional fisheries exist", that they "help earn foreign exchange for the country", and that "they play an important role in the fight against poverty and supply of fish for national consumption".

- How to manage access to the coastal area, with the traditional fisheries as a sector having priority access.

Fishworkers wanted their rights of access to be recognized and protected. They also wanted to be involved in the management of their coastal zones and the resources they contained, in order to ensure sustainability of stocks and to fight against coastal pollution.

In the same year, 'Representatives of Malagasy Fishworkers' participated in the World Forum of Fishers meeting, held in Loctudy, France. This enabled COMM to become a member of the World Forum of Fisher Peoples (WFFP). At the same time,

there was a European campaign on shrimp fishing in Madagascar initiated by the NGO AGIR ICI, with other French and European partners.

Now, in a context where the French government and the shrimp fisheries dominate the Malagasy fisheries scene, the road seems long and bleak. At a time when they are trying to establish a national-level platform to defend their interests and help develop their capabilities to participate in resource management and decision-making processes, traditional fishworkers are facing a highly confusing and hugely competitive situation. Two important fisheries management programmes are being taken up at the national level:

- First of all, within the framework of the national Environmental Programme, the Malagasy State has established a Ministry for the Environment. Its first operational programmes are the 'Protected Areas and Zones' implemented by ANGP (National Organization for the Management of Protected Areas) branch of the National Environmental Office (ONE), and funded by the World Bank and the World Wide Fund for Nature (WWF). It is worth noting that this programme owes much of its effectiveness to the policy approach adopted, specifically within the framework of building up the responsibility of grassroots communities based on traditional norms. Within the same Ministry, the Marine and Coastal Branch (EMC) is taking an active part in this programme by encouraging coastal communities to become involved in an integrated coastal zone management programme (GIZC). This programme has established the GELOSE (Locally Secured Management) framework that provides fishing communities with the rights to manage and control the different activities being undertaken in their respective areas.
- By contrast, for the industrial fisheries, a programme to establish 'Concrete Zonal Management' (ZAC) has been initiated. This is supported by the French Agency for Development (AFD) and financed by French public funds. It is being implemented through the French commercial interests party to the GAPCM, a grouping of Malagasy shrimp industry organizations, and is supposed to provide a tool to resolve resource allocation problems as well as all kinds of conflicts within the fisheries. This five-year programme is

both supported and backed by the Malagasy Ministry of Fisheries and Fisheries Resources. As a result of being part of the aid being pushed by French public funds, the ZAC project and the associated programme have come to dominate the fisheries management debate in Madagascar. Through this programme, the GAPCM would like to see small-scale fisheries develop as a service providing subsector of the shrimp industry.

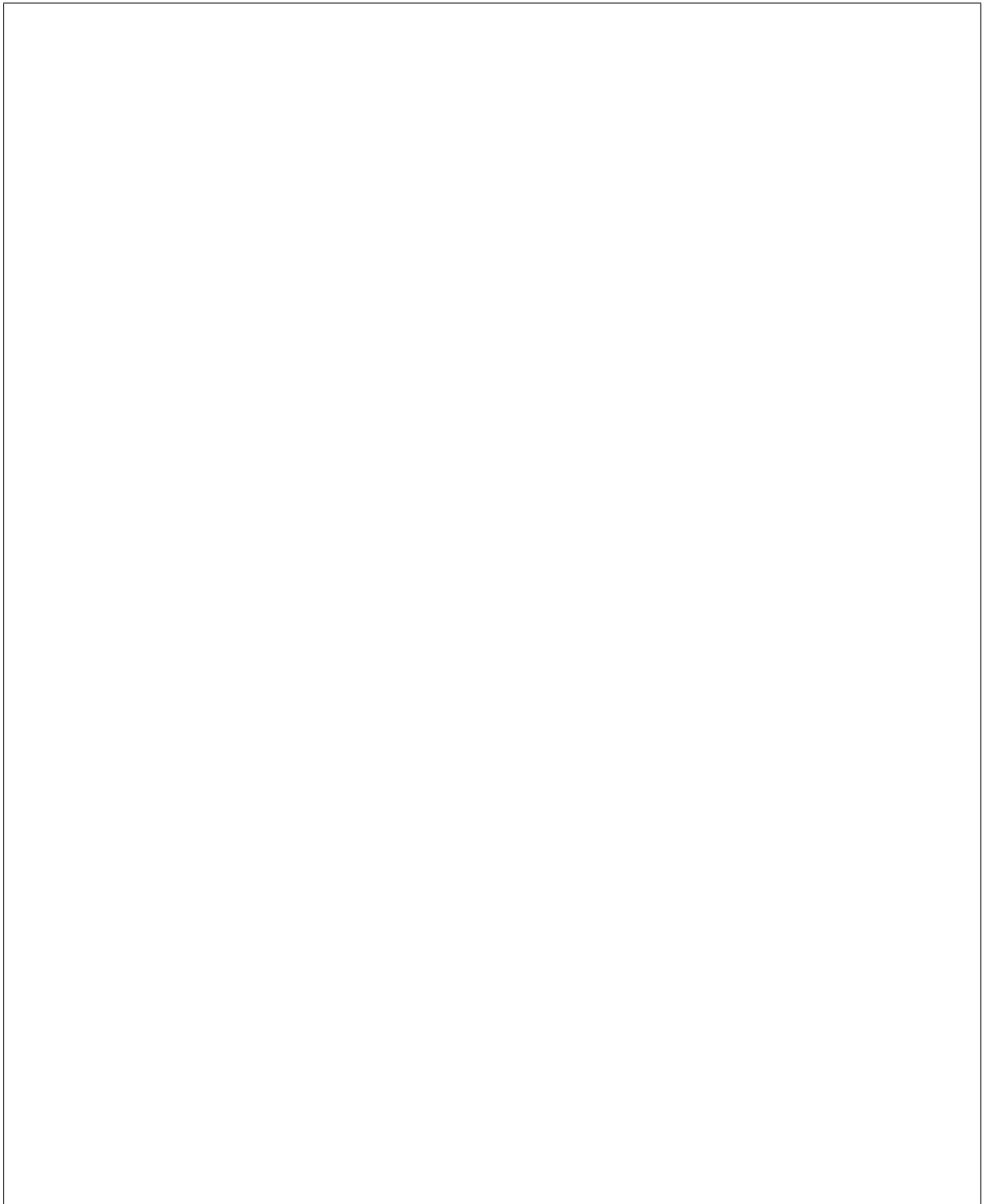
- Within the same programme, in December, a workshop on the Management of Shrimp Fisheries in Madagascar was organized at the ministerial level. In reality, it was the GAPCM (changing their name from the Organization of Malagasy Shrimp Fishery Vessel Owners to the Organization of Malagasy Shrimp Fishers and Vessel Owners) who were behind this meeting. COMM, represented by its Executive Secretary, was honoured to give a presentation entitled "The Problematic of the Zone Reserved for Small-scale Fishing". The issue of

traditional fisheries was at the centre of the workshop debates, and has now become an issue of concern.

In 2001, there is recognition that the traditional fishing sector may be of global concern; but it also requires an administrative basis. There should, therefore, be an open exchange between administrators and fishworkers. A roundtable meeting of fishworkers was, therefore, organized in Tananarive from 14 to 17 March to discuss the the issues of "Traditional Fisheries and Food Security, Sustainable Development, and Poverty Alleviation".

What more is there to say on this occasion when the coastal States of the Indian Ocean are meeting to discuss their future? Specifically, in the case of Madagascar, one can say that, with each step taken, further important issues become apparent.

We hope that, in the course of time, we will identify what effective actions need to be taken in the future to make the maritime sector more just, equitable and humane.



Illegal Fishing: The Case of Mozambique

Simeao Lopes and M. A. Pinto †*

Abstract

The fisheries sector plays an important role in the economy of Mozambique, contributing to 40 to 50 per cent of the country's foreign exchange earnings. An extensive coast that supports diverse fisheries makes Mozambique a sensitive place for illegal, unregulated and unreported (IUU) fishing.

This paper discusses the relation between IUU fishing and surveillance capacity, length of the coastal zone, commercial value of the resources and the national fishing capacity of Mozambique.

Keywords

Mozambique. Illegal, unreported and unregulated fishing. IUU. Surveillance. SADC. Shrimp fishery.

1 Introduction

Mozambique lies between 10°20' north (from the mouth of the Rovuma River on the Tanzania border) and 26°50' south (at Ponta do Ouro on the South African border). The coastline is 2,770 km long, and the exclusive economic zone is 562,000 sq km. The fisheries sector plays an important role in the economy of the country, contributing about 40 to 50 per cent of Mozambique's foreign exchange earnings in recent years. About 85 per cent of the exports by value come from industrial shallow-water shrimp fisheries, which is the most important fishery. The extensive coast, which supports diverse fisheries, makes Mozambique a target for, illegal, unreported and unregulated (IUU) fishing.

Mozambique occupies 800,000 sq km on the southeast coast of Africa, sharing boundaries with South Africa, Swaziland, Zambia, Malawi and Tanzania. The country has 25 major rivers and several ports. The coastal plain is broad and characterized, in many places, by large deltas and low-lying riverine areas, many of which are susceptible to flooding. About 80 per cent of the 16 mn people live in rural areas. The central and northern provinces are characterized by fertile soils and plentiful rainfall, but suffer from poor accessibility. In the south-

ern provinces, the soils are poor, and rainfed production is marginal, but accessibility is relatively good, particularly in Maputo, the nation's capital and largest market, as well as in South Africa.

2 Historical Context

Mozambique won its independence in 1975. The exodus of Portuguese settlers and Asian traders, the subsequent adoption of central planning, nationalization of major enterprises, and the civil war from the late 1970s to the early 1990s resulted in a collapse in production, and heavy dependence on foreign aid. Only after the 1992 peace settlement was Mozambique able to effectively pursue economic policies based on privatization of public expenditure and pursuit of fiscal balance. Since 1992, the government has won a well-earned reputation for prudent macroeconomic management and commitment to rural poverty alleviation, a positive picture that has only recently been disrupted by serious floods that affected much of the country in 2000 and 2001.

A stable multiparty democracy has been established and consolidated; political and economic decentralization has proceeded, albeit gradually;

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the constitution has been substantially revised, through an open process of public hearing, so as to achieve a better balance of power in the State apparatus; and legislation has been passed in areas such as governance ethics.

3 The Economy

Mozambique is one of the world's poorest countries, with 70 per cent of the population living below the poverty line. Yet the country is rich in underexploited resources. Peace, better policies, rising foreign investment and continued external assistance have contributed to encouraging economic performance and the creation of an environment in which these resources can be developed. Real gross domestic product (GDP) has been increasing at an annual average rate of 10 per cent since 1996.

The value of exports, of all the sectors, has increased rapidly and is rising faster than the value of imports. Annual inflation declined from 70 per cent in 1994 to less than 1 per cent in 1998, and it was expected to hover at 4 per cent in 1999–2000, as the government relaxed its monetary policy. Nevertheless, flooding and other factors have resulted in inflation rising to 9 per cent. However, confidence in the economy is strong, and private investments have grown over the past few years and are expected to cross 25 per cent of GDP by 2002.

The government's Poverty Reduction Strategy Paper, approved by the cabinet, aims to reduce absolute poverty by 30 per cent, by 2009. The strategy emphasizes the promotion of economic stability and broadbased high growth (based on the development of manufacturing and construction and increased agricultural productivity); improved access to education, water, health and sanitation; the development of rural infrastructure; promotion of self-employment; and protection of vulnerable groups.

4 Strategic Importance of Fisheries

The fisheries sector contributes to only 3 per cent of the country's GDP. Mozambique's fish exports, valued at approximately US\$75 mn in 1999, make up about 28 per cent of total exports and 12 per cent of foreign exchange earnings. Over 85 per cent of the exports by value come from shrimps, which is the most important fishery in the country. The main markets are the European Union (EU), Japan and South Africa.

Marine fisheries account for more than 80 per cent of the country's total production. About 90,000 people are directly involved in fishing, processing and marketing. Marine fisheries provide for more than 90 per cent of the jobs in the sector. With over two-thirds of the population within 150 km of the coast, about 50 per cent of the people's protein intake is estimated to come from fish. Overall, it is estimated that the country uses only about 25 per cent of its exploitable fish resources (FAO, 2000).

5 Resources and Trends

Around 1,500 species of fish are present in the Mozambican seas, of which 400 are of direct commercial importance. The catch of fish was estimated, in 1995, at over 350,000 tonnes, but only 25 per cent of this was utilized. Pelagic fish and demersal species, in particular, seem to offer possibilities for increased expansion. Large demersal and pelagic fish have high value, and can command good prices domestically and abroad. According to the production nomenclature used in Mozambique, this type of fish is known as 'first category fish'. The other categories are 'second' and 'third' (IIP, 1999). The yearly average catch rates, from 1977 to 2000, showed a decreasing trend, though effort had increased. For the same period, the total catch figures showed some fluctuation, with lower catches reported between 1990 and 1994.

6 Main Features

In the artisanal sector, traditional fishing methods dominate. The main artisanal fishing gear are beach-seines, gillnets, hooks-and-line and traps. For local fishermen and their families, the artisanal fishery is important in terms of food supply and income generation. Nevertheless, the per capita fish consumption is about 6 kg per annum. It is estimated that the fisheries sector employs around 100,000 people, of whom 90 per cent are full-time fishers.

The sector has a total of 87 semi-industrial boats, most of them based mainly in the Beira and Maputo areas. Different fishing gear are used, such as bottom-trawl nets, gillnets, longlines, hooks-and-line and seine nets.

The industrial fishery consists of large trawl vessels, equipped with deep freezers, which make monthly trips to the main fishing area, Sofala Bank. This fishery, specially oriented towards shallow-water bottom trawling, is aimed at the export

markets supplied by joint venture companies in Mozambique.

7 Fisheries Management

The fishery sector is managed by the Ministry of Fisheries (MoF) of the Government of Mozambique, under three national Directorates, three Departments and four financially autonomous institutions, namely, the Fisheries Development Fund (FFP), the National Fisheries Research Institute (IIP), the National Small-scale Fisheries Development Institute (IDPPE) and the Fishing School (EP).

At the provincial level, the MoF is represented by the Provincial Services for the Fisheries Administration (SPAP), which has the main task of monitoring and controlling fishing activity. The Maritime Administration (ADMR), under the Ministry of Transport and Communication, has the responsibility for controlling artisanal fisheries.

The shrimp fishery is managed by monitoring the total allowable catch (TAC). A three-month closed season, from December to March, is used to keep the catch below the TAC. There is also a minimum legal mesh size limit of 55 mm.

8 Illegal Fishing in Mozambique

Illegal fishing is defined as “any fishing or related activity carried out in contravention of the laws of a State Party or the measures of an international fisheries management organization accepted by a State Party and subject to the jurisdiction of that State” (Article 1, Protocol on Fisheries of the Southern African Development Community, SADC).

Illegal fishing in these waters appeared as a consequence of the crisis and shortage of kapenta (*Limnothryssa miodon*) in the Kariba Reservoir, located at Zambezi River, which, in turn, caused the exodus of Zimbabwean kapenta fishers to the Cahora Bassa reservoir in Mozambique, considered a better fishing ground.

The most common infringements relate to illegal imports of boats, fraudulent licensing, jettisoning of investment projects, unauthorized fishing, and violation of licence validity.

It should be noted that illegal boatowners are mostly foreigners and nationals who partner with the former. Kapenta fishing at night, coupled with insufficient supervisory bodies and lack of proper technical knowledge, make supervision impractical and cause misreporting of some infringements

to the Provincial Services of Fisheries Administration (Castiano, MoF, 2001).

There are other cases of illegal fishing reported from Lake Niassa, involving fishermen from the Tanzanian and Malawian areas, who are reported to use destructive fishing methods (using mainly poison and dynamite).

9 Illegal Marine Fishing

The problem of illegal marine fishing in Mozambique by outsiders is well recognized, though not reflected in official figures. The lack of an institutional infrastructure to supervise the coast, investigate reported cases and, if necessary, sue offenders leaves the country vulnerable to such illegal activities.

Local boatowners are aware of the occurrences of night fishing in Mozambican territorial waters, mainly by foreign vessels. These activities take place particularly in the region of Cabo Delgado (Palma and Mocimboa da Praia), Inhambane (in the Bazaruto area) and Nampula (Angoche and Mussoril), and are presumably related to highly migratory species, mainly tuna.

On the other hand, some dubious recreational fishing practices, mainly undertaken by South African and Zimbabwean tourists, under the pretext of sport fishing, create conflicts with local boatowners.

10 Causes of Illegal Fishing

Some factors behind illegal fishing are: excessive fishing effort; decrease of catch of high-value resources; inefficient systems of monitoring, control and surveillance; and inadequate knowledge of fisheries legislation, combined with the fear of disapproval by the Ministry of Fisheries.

11 Consequences of Illegal Fishing

Illegal fishing leads to several damages, like the gradual loss of national income (mainly from taxes); conflicts between foreign fleets and local owners/fishers; an undue increase of catch effort; and a decrease in fish stocks, leading to unsustainable fishing.

National and regional strategies are being thought of to combat illegal fishing from abroad. The MoF is being restructured to deal with fisheries administration and management. At the regional level, the SADC Head of States have just agreed, last

August, on regional mechanisms to control fisheries activities amongst the member States. In fact, a regional Protocol on Fisheries was adopted last August in Malawi. The document lists, among other things, some regional strategies, namely:

- Harmonization of the principal concepts to be observed by the member States for the control and monitoring of fishing activities in the region and the administration of the sector.
- Establishment of the main basis for the use, regulation and protection of resources.
- Creation of a committee of ministers responsible for fisheries in the inland and marine waters of each member State.

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Status and Trends of Tanzania's Marine Artisanal Fisheries

Narriman Saleh Jiddawi *

Abstract

About 95 per cent of the fishery in Tanzania is artisanal, involving traditional boats and gear. The inshore fishery has recently been showing signs of overexploitation, especially in Zanzibar. The high seas within the exclusive economic zone, rich in migratory species such as tuna, sailfish and marlin, remain unexploited, though their resource potential is not known.

Most of the fishing practices are destructive and have caused significant damage to the reefs. The problem persists due to the lack of monitoring, control and surveillance.

This paper looks at these issues, while also focusing on the state of fisheries research in Tanzania, which, though begun at the start of the century, is proceeding at a slow pace.

Keywords

Tanzania. Zanzibar. Mafia Channel. Monitoring, control and surveillance. FAO. Tanzania Fisheries Research Institute. TAFIRI. Institute of Marine Sciences. IMS. University of Dar es Salaam. Shrimp. Rufuji Delta. Fisheries research.

1 Introduction

All over the world, fisheries are of immense importance and most of the coastal people depend on fisheries for their livelihoods. About 95 per cent of the fishery in Tanzania is artisanal, involving traditional boats and gear. The boats include dhows, outrigger canoes and canoes. The gear include nets, movable traps (*dema*), hooks-and-line and fixed traps (*uzio*). Total catches range from 48,300 tonnes to 56,779 tonnes for the Tanzania mainland, and for Zanzibar, from 21,632 tonnes in 1984 to 10,062 tonnes in 1998.

The continental shelf is narrow, about 4 km offshore, with the exception of the Zanzibar and Mafia channels, where the shelf extends for approximately 60 km. According to the Food and Agriculture Organization of the United Nations (FAO), the area of the shelf to the 200 m depth contour, for both the mainland and Zanzibar combined, is 30,000 sq km (1988). This is the area most commonly used by the artisanal fishermen.

The inshore fishery has recently been showing signs of overexploitation. This can be seen especially in Zanzibar where the trend in annual catch is showing a decline. These signs can also be detected from the elder fishermen who claim that, in the past, they used to catch much more and larger fish in nearshore waters than is currently the case, and they also claim to now have to travel farther to obtain these catches.

The high seas within the exclusive economic zone continues to be unexploited and the resource potential remains unknown. However, the area is rich in migratory species such as tuna, sailfish and marlin.

Most of the fish caught in inshore waters by artisanal fishermen are demersal species (*Lethrinidae*, *Serranidae*, *Siganidae*, *Mullidae*, *Lutjanidae*), followed by large and small pelagic species (*Carangidae*, *Scombridae*, *Clupeidae*, *Engraulidae*). Others include sharks and rays, crustaceans, octopus and squids.

Most of the fishing practices are still destructive and have caused significant damage to the reefs. The most common destructive methods involve dy-

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namites, dragged nets (*juya la kigumi*) and spears. Also, marine products like *beche de mer* are collected without any size considerations. The problem persists due to lack of monitoring, control and surveillance.

Fisheries research in Tanzania has been conducted since the beginning of the century, though at a slow pace. Research increased in the early 1940s with the establishment of the EAMFRO organization. Subsequently, FAO played a key role in conducting research directed towards the development of fisheries in Tanzania. However, most of the research in the country is currently conducted by the Tanzania Fisheries Research Institute (TAFIRI), the Zoology and Marine Department, and the Institute of Marine Sciences (IMS) of the University of Dar es Salaam. Recently, the International Union for Conservation of Nature and Natural Resources (IUCN—The World Conservation Union) in Tanga and the Frontier Organization in the southern part of Tanzania have also played an active role in marine research.

Industrial fishing in Tanzania is conducted mainly by the Dar es Salaam-based Tanzania Fisheries Corporation, which fishes mainly for shrimp, and the African Fishing Company, based in Zanzibar, which targets mainly pelagic fish in the deep sea.

2 Importance of the Resource

Tanzania, with its 850 km coastline and numerous smaller islands, including Zanzibar, is rich in fishery resources along its banks and coral reefs. Fishing plays an important role as a source of cheap protein and employment. The number of full-time fishermen operating in Zanzibar is 23,000 and there are about 1,500 fishermen along the coast of Tanzania. The per capita fish consumption is 25-30 kg. The contribution of fishery to the nation's gross domestic product (GDP) varies between 2.1-5 per cent in the Tanzanian mainland and 2.2-10.4 per cent in Zanzibar, mostly from export of fishery products. Tanzania exports approximately US\$ 7,652,700 worth of marine fishery products from the mainland and about US\$598,203 worth from Zanzibar. The products are shrimp, *beche de mer*, shells, lobster, crabs, squids, octopus, sardines, fish offal and aquarium fish.

Coastal communities depend on fishing as their main source of income, and 95 per cent of the fish landings in Tanzania come from these fishermen. Some of these resources such as shark fins and sea

cucumbers are exported to the Far East. Trade in these resources has existed for centuries. Shark meat is widely consumed, although it is not as popular as other species of fish. The jaws and teeth of sharks are sold to tourists.

Some fresh fish is exported overseas and earns foreign exchange. Most of the export revenue comes from shrimp. The two main fishing grounds for shrimp are around Bagamoyo/Sadani and the Rufuji Delta in South of Tanzania, where about five species of shrimp are caught.

3 Condition of the Resource

Tanzania's fishery resources have reached the upper level of exploitation. This is believed to be because fishermen have been fishing in the same areas since time immemorial due to the limitation of the range of their non-motorized fishing vessels. The resource depletion is also due to a lack of proper management strategies. Interviews with fishermen confirm that catches are declining, and an increase in fishing effort will not result in increased catch rates. The total annual catch in Zanzibar was about 20,000 tonnes in 1988, but has currently dropped to less than 13,000 tonnes. A localised reduction in fish catch can also be observed in some areas, such as Chwaka bay, and for specific fisheries, such as the reef fisheries.

Some resources have been affected more than others. For example, in the small pelagic fisheries of Zanzibar, the catches by the boats of the Zanzibar Fisheries Corporation have declined drastically from 600 tonnes in 1986 to 91 tonnes in 1997. The history of the purse-seine fishery has been documented in a video produced by N. S. Jiddawi for the Marine Education and Extension Development Unit at the Institute of Marine Sciences, Zanzibar.

Fish resource assessment surveys conducted in the 1970s and the 1980s estimate the standing stocks for the coastal waters as ranging from 94,000 tonnes to 174,000 tonnes, respectively. Annual yield estimates for demersal species was 38,000 tonnes and for pelagic species, about 23,000 tonnes.

Seashell and sea cucumber resources are over-exploited along the whole coast due to rampant collection. There have been no population studies of any of the commercially exploited species. However, the traders claim that the sizes of some of the sea cucumbers have reduced tremendously, but competition forces them to continue buying whatever is available. In most parts of the region, including Tanzania, the longline fisheries are re-

porting drastically lower catches, both in numbers and weight. The shark-fin trade has also declined, while some fish species are rarely seen now in Tanzania waters.

4 Type of Data/Information Gathered in Tanzania

A lot of work has been conducted in Tanzania on fisheries, covering a range of subjects from general fisheries to information based on resource constraints, development and management issues. Fisheries surveys have used scuba and snorkeling techniques, mainly in coral reef areas along the coast of Tanzania and Zanzibar. Fisheries data have been collected from landing sites through monitoring programmes in areas such as Matemwe and Mkokotoni in Zanzibar, and Tanga and Bagamoyo.

Of the 334 references that pertain to fisheries in Tanzania, 40 per cent are baseline studies, most of which were conducted in the 1990s. Fewer than 10 masters and doctoral studies have been conducted. These have mainly provided information on specific fishery topics, such as the biological aspects of siganids and their mariculture potential in Tanzania, the food and feeding habits of Indian mackerel from Zanzibar, reproductive biology of the squid in the coastal waters of Zanzibar, the dynamics of the trap fishery in the coastal waters of Zanzibar and the population dynamics of the small pelagic fishery in the Zanzibar channel.

4.1 Observational studies

Only 0.9 per cent of the studies were of an observational nature, involving underwater visual surveys in Fumba Peninsula. Observational studies were also conducted in seaweed-growing sites on the east coast of Zanzibar to map the distribution and abundance of inshore fish assemblages.

4.2 Experimental studies

Experimental studies are more related to gear development and usage, and aquaculture, such as preferential settlement of oyster spats on different substrates in Zanzibar. Another important aquaculture study is the integrated fish farming model that was developed in Israel and tried at Makoba in Unguja island by the Institute of Marine Sciences, in collaboration with the Prison Department.

4.3 Applied studies

Applied experimental studies were few, accounting for 2.7 per cent of all the studies. They were mostly related to aquaculture experiments, such as the cage culture of *Siganus* species, the aquaculture of rabbit fish and milkfish in ponds at Makoba.

4.4 Review studies

Most of the fisheries reports (41 per cent) were in the nature of review, mainly presenting general information on fisheries in different parts of the country and the west Indian ocean region. Several reports discuss fisheries development in the country and the priorities for fisheries management.

4.5 Other types of studies

Fishery resource surveys have been grouped in this category and forms 12 per cent of all the studies. All the fish resource surveys conducted by research vessels in Tanzanian waters and the region falls under this category. These surveys include the surveys conducted by Fidjitof Nansen in the 1980s and the survey by Mestyasev, the surveys conducted by Mbegani fisheries Institute through its research vessel *MV Mafunzo*. These surveys provided an insight into the fishery potential and stock abundance in Tanzanian waters.

4.6 Grey literature

Out of 331 references listed, about 70 per cent are 'grey'. Only 52 of these reports have been published in international journals. The rest of the reports appear as seminar proceedings, institute reports, consultancy reports, and student reports. Some are masters and doctoral theses, retrievable from the university's main library.

4.7 Currency of information

About 45 per cent of the references were written in the 1990s, especially those connected with projects from Tanga, Mafia, Mtwara, Bagamoyo, Matemwe and Mkokotoni in Zanzibar. About 36 per cent of the reports were written in the 1980s and the rest between 1920 and 1970s. The earliest reference that we were able to come across, dating back to 1929, was on a survey of marine fisheries of the Zanzibar Protectorate.

The earlier research papers aimed at looking at how fisheries could be developed in the country.

These were followed by research on gear technology and species availability. Although there lately appear to be more fisheries papers than before (see Figure 1), most of these are short-term and aimed at providing baseline information. All reports have assisted in one way or another in addressing scientific and management issues.

4.8 Geographic coverage

Although fisheries seems to be widely studied, several gaps exist. Most of the studies are conducted in areas where research institutions or projects exist. The majority of the reports come from Zanzibar, Mafia, Mtwara, Tanga, Dar es Salaam and Songosongo. A few are from Rufiji, one from Pemba and one from Ruvu. Many areas have still not been studied due to the absence of an institution or donor-assisted projects (see Figure 2).

4.9 Subject coverage

Most of the reports (62) discuss general fisheries issues in Tanzania. Several (28) discuss the biological aspects of fish. About 47 references present information on specific fisheries, such as the shark fisheries or the demersal fisheries. About 10 present information on socioeconomic aspects of fisheries. Fisheries development is included in about 15 references. Conservation issues, marine parks and integrated management of fisheries are discussed in 67 references (see Figure 3). The huge number of references is misleading, as there is a lot of repetition of subjects.

4.10 Duration of studies

Most of the studies were short-term. There is a need to repeat these studies for a longer duration. The only long-term study, which is still ongoing, is the Matemwe and Mkokotoni fish monitoring study.

4.11 Currency of studies

Though there are several new studies, most are short-term and have been conducted by students aiming at grades for their subjects, and are not geared at problem solving. However, a lot of useful surveys were conducted in the 1980s. Since then, none has been conducted. Some useful studies were also conducted in the early 1960s and 1970s under the East Africa Marine Fisheries Organization.

4.12 Information accessibility

Almost 50 per cent of the information is difficult to access, as it is in the form of unpublished reports. Therefore, despite the presence of a large number of reports, their accessibility is a problem. In most cases, only one copy of the report exists and it is in the hands of the author (see Figure 4).

5 Recommendations for Future Work

1. There must be better collection of data on landings and economic parameters from fisheries. Without effective data collection, it will be difficult to formulate better management strategies. Therefore, for the assessment of these fisheries, it is important to use standardized techniques for the whole country, for purposes of comparison and incentive schemes for data collectors.
2. Specific reference points should be selected along the coast for monitoring purposes to ensure that at least the whole coast of Tanzania is represented. These could be in the major fish-landing ports and places such as marine protected areas where such information is required.
3. The areas that have been less studied, such as minor fisheries like the octopus fishery, the sea cucumber fishery and the fence-trap fishery, need to be studied. Also, more biological studies of important commercial fish species need to be done.
4. Basic studies on the food and feeding habits of fish, the results of which can be used in ecosystem modelling, need to be done. Research should be multidisciplinary and integrated, involving all users. Socioeconomists and scientists should formulate joint research proposals to determine problems facing the fisheries industry.
5. Monitoring is required throughout the country, especially to look at catch landings, catch rates and species diversity so as to be able to determine immediate changes. The monitoring exercise needs to be long-term and involve community collaboration with scientists.

6. Most of the fisheries staff in Tanzania are at the educational level of diplomas and masters degrees. There is thus a need for capacity building among fisheries staff, especially in view of the scarcity of such people in the country.
 7. Effective communication links between relevant institutions within the country can reduce duplication efforts, as well as keep them up to date with what is happening in the country.
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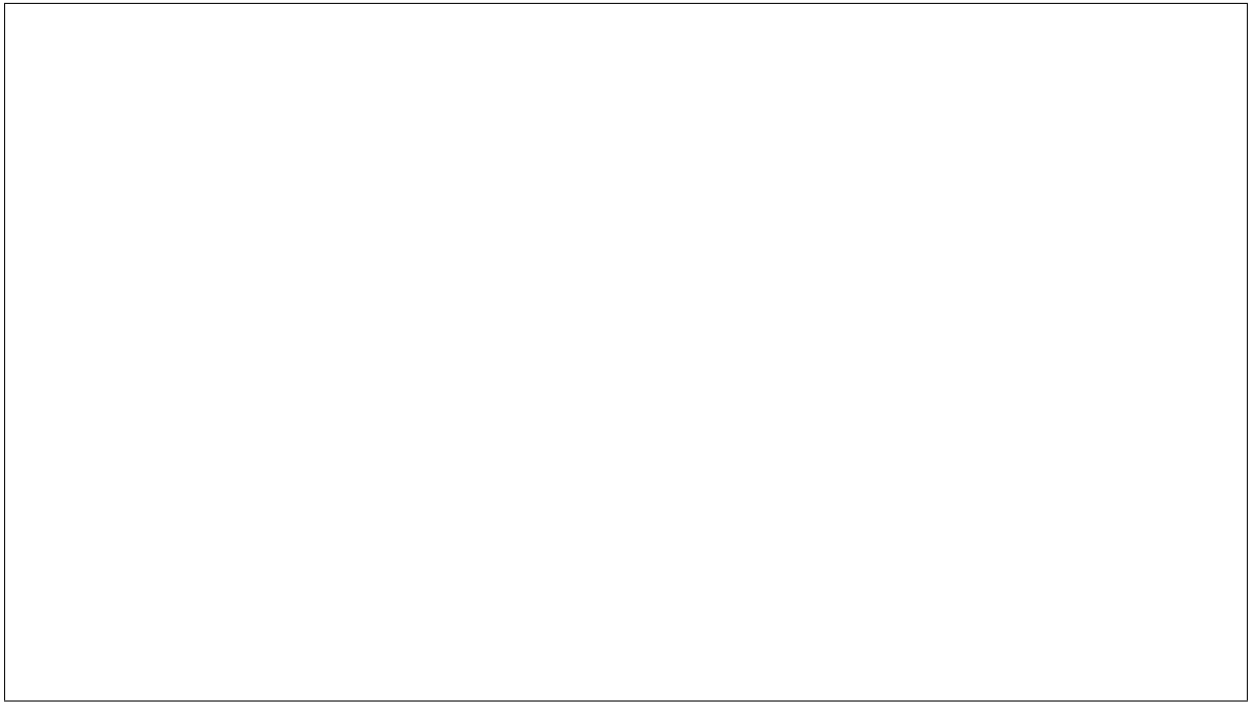


Figure 1: Trend in fisheries research in Tanzania

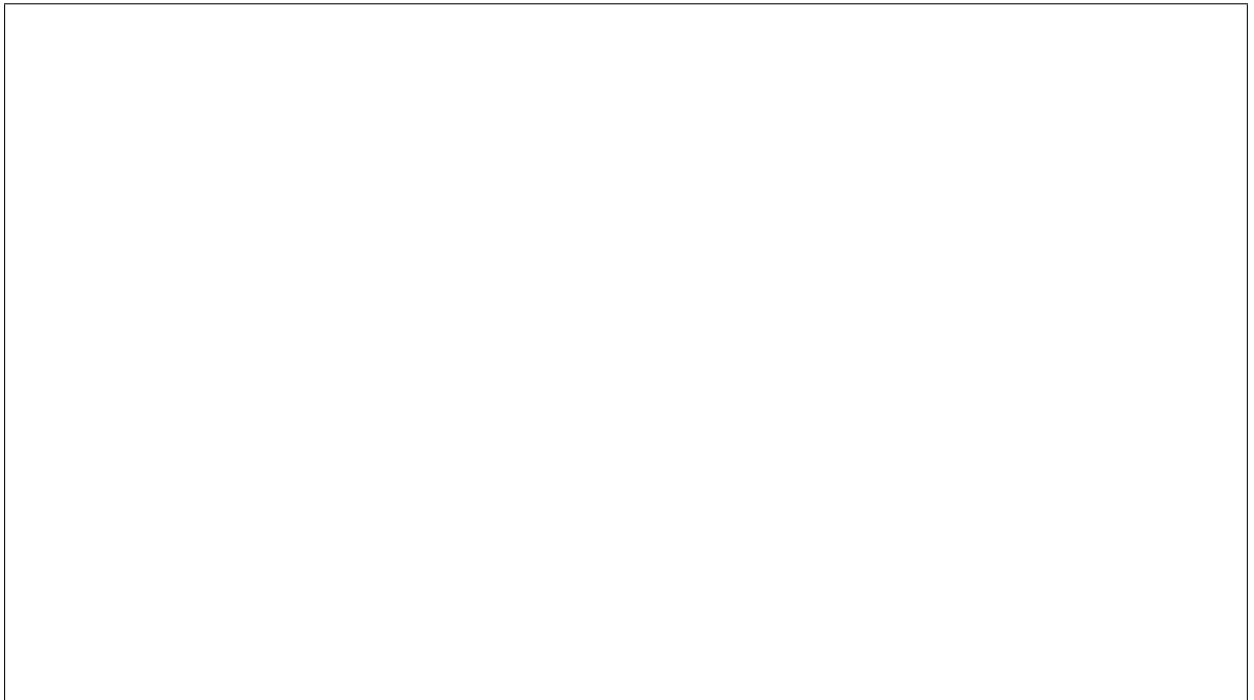


Figure 2: Areas in Tanzania where fisheries research has been conducted.

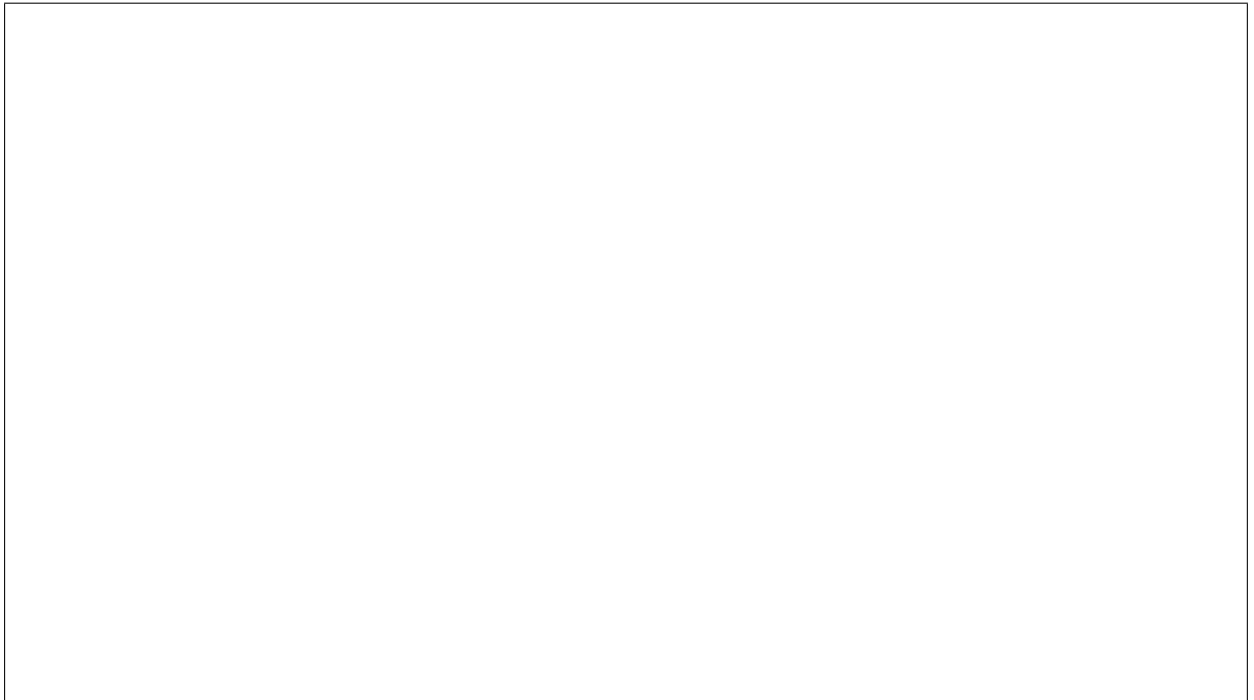


Figure 3: Subject categories in fisheries research

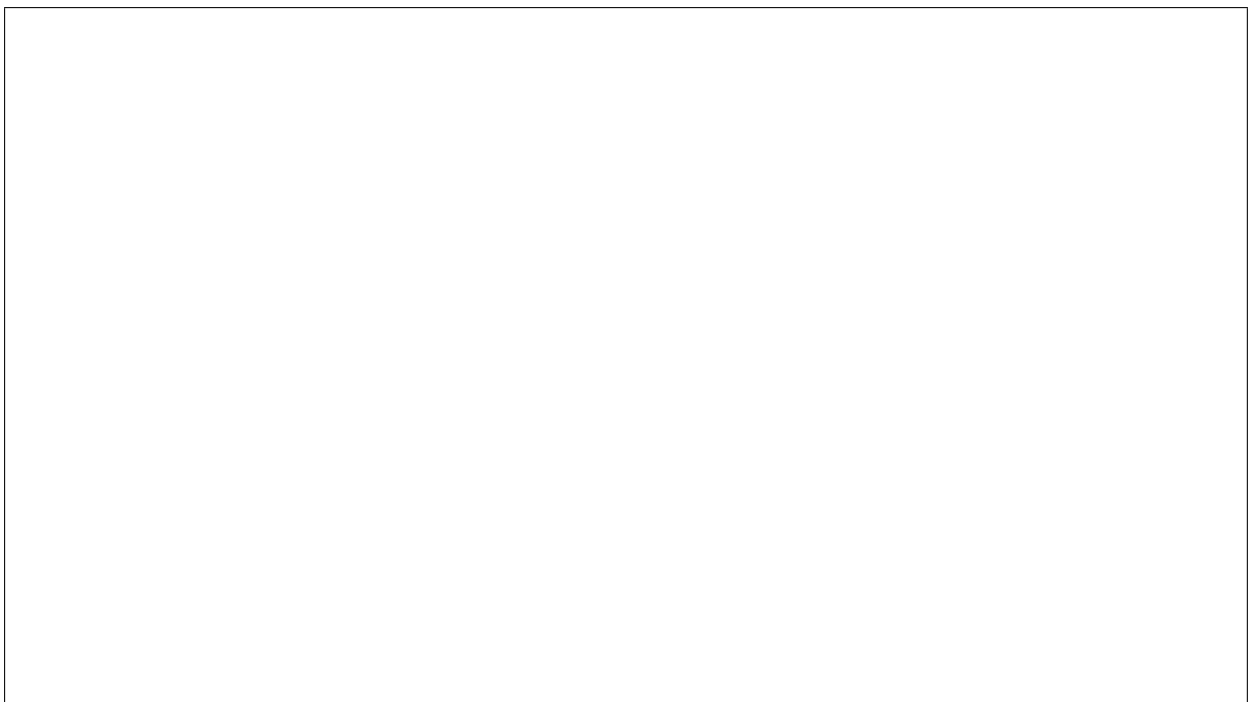


Figure 4: Information presentation by researchers

Coastal Marine Ecosystem through Community Management

*Pisit Chansnoh **

Abstract

This paper outlines the efforts of Yadfon Association to oppose inappropriate fishing techniques and large-scale coastal development and to support local conservation efforts in 20 fishing villages in Trang Province of southern Thailand.

By empowering the communities to help themselves, Yadfon and the villagers have made impressive achievements in protecting coastal resources and the traditional way of life. Similar approaches have been extended to 10 other provinces in southern Thailand. Small fishers have proven themselves capable of managing their resources sustainably, and they are now calling on the government to recognize the people's rights to manage resources independently, according to their own local wisdom.

Keywords

Thailand. Trang Province. Yadfon Association. Mangrove. Seagrass beds. Coral reefs. Sea turtles. Dolphins. Dugong. Shrimp aquaculture. Logging concession. Destructive fishing. Small Fisher Federation. Resource conservation.

Half a million small-scale fisherfolk of Thailand once lived quiet and peaceful lives, sustaining themselves along the coasts. Now, however, their lives have been upset by the destruction of the coastal ecosystem on which their way of life depends. Mangrove forests, seagrass beds and coral reefs have been widely degraded as a result of destructive fishing gear, and the rapid development of intensive shrimp aquaculture. Yadfon Association has been working in 20 fishing villages in Trang Province, southern Thailand, to oppose inappropriate fishing techniques and large-scale coastal development, and to support local conservation efforts.

Through the empowerment process, fisherfolk have joined to stop using destructive fishing gear, dynamiting and cyanide poisoning, and have successfully petitioned the local government to ensure that regulations are enforced within the protected 3-km coastal zone. Since 1985, villagers have worked together to rejuvenate the coastal mangrove forests, the seagrass beds and the coral reefs.

As a direct result of their activities, many species of marine animals have returned to local waters, and the income levels of the fisherfolk have increased significantly.

The fisherfolk have proven that they are capable of managing their resources in a sustainable manner. They now request the government to recognize their achievements by granting them the right to manage these marine resources independently. By providing support for fisherfolk conservation activities, instead of leaving the development process in the hands of government officials and businesses, the government will be able to ensure a healthy, productive coastal ecosystem, and a sustainable livelihood for fisherfolk families, who are an important component of Thailand's cultural heritage.

Along the 2,600 km of coastline in the lower half of Thailand, there are approximately 65,000 fishing households whose survival is intimately linked to the health of the coastal ecosystem. This ecosystem

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is composed of three important living resources: mangrove forests, seagrass beds and coral reefs.

The three natural areas form a complex, interdependent and delicately balanced ecosystem. Mangrove forests are scattered along 927 km of the coast and are home to 74 flora and 386 fauna species. Seagrass, growing in calm, shallow waters, provides habitat for countless numbers of sea creatures, including shrimp and crab. Together, these natural areas form a complex ecosystem where many commercially valuable species spawn and grow. The health of this ecosystem directly affects the well-being of the coastal fisherfolk. Although once plentiful enough to support these communities, in recent years, these resources have been threatened by the encroachment of development, the use of destructive fishing techniques and the application of unsustainable government practices.

Granting concessions to log mangrove forests is one example of such unsustainable government practices. The Forestry Act has granted the private sector the right to log mangroves since 1941; however, in 1968, the concession system was reorganized to allow each concessionaire the right to harvest an area of 2,500–5,000 rai (1 rai = 1,600 sq m) for 15 years. Each year, one strip was to be logged using the 'clear-cut' method. At the end of the year, the strip was to be re-forested, and the next strip logged.

While the forestry department believes that this method will make it possible to preserve the forests, the reality is that the concessions have not been operated according to the ground rules. In most cases, the entire area was logged immediately, causing great damage to the ecology of the coastal ecosystem. A government report in 1991 cited several areas that had once been 200,000 rai. The evidence provides a clear indication that this system is not working and is in urgent need of review.

Encroachment on, and destruction of, mangrove forests have increased since the government began promoting shrimp farming using modern, intensive techniques. These systems rely on high-nutrient food and antibiotic drugs, together with the poisoning of 'undesirable' marine animals to accelerate the growth of shrimp.

Until 1986, encroachment of mangrove forests affected a total area of 690,000 rai or 64.3 per cent of the total forest area destroyed. Although there are no official figures on the effects of shrimp farming, the magnitude of the destruction can be easily appreciated. Between 1986 and 1989, the mangrove forests were reduced by 99,000 rai and, between 1989 and 1991, in five eastern provinces alone, man-

grove forests were reduced by another 59,000 rai. These documented losses, as well as the thousands of rai of undocumented loss, are primarily a result of shrimp farming.

Much of the seagrass forest and large areas of coral reef have been destroyed as a result of coastal activities, including waste water discharge from shrimp farms, industrial plants and communities. The use of large fishing gear, such as drag-nets and beach-seines, exacerbates the situation by sweeping the sea floor and causing structural damage to the grasses and corals. Other destructive fishing methods include the use of explosives and poisons. Even though laws exist to prohibit the use of destructive fishing gear within 3 km of the coast, violations have been common, and enforcement has been weak.

As a direct result of the deterioration of the coastal ecosystem, many fishing villages have faced severe hardships. Fishers are burdened by the high cost of modern fishing equipment, and they must travel farther and work longer hours in order to maintain a decreased income. In some cases, whole communities have collapsed as households have been forced to sell their lands, and community members have become wage labourers or hired hands on commercial fleets. Men and women can be forced to stay away from home for months at a time, often returning with little money. A negative spiral can easily begin as social collapse causes an increase in social problems, such as drinking and gambling, which further destroy the community.

Yadfon Association has been working with 17 small fishing communities in Trang Province since 1985. Before Yadfon initiated its work, the villagers in these communities had already been trying, by themselves, to protect their fishing grounds and the mangrove forests, seagrass beds and coral reefs on which their fertility depends. However, they achieved little success.

One of the first projects that Yadfon undertook was to initiate a 587-rai community forest, set up under the support of the provincial authorities. This became the first community mangrove forest in the country supported by the Forestry Department. Encouraged by this initial success, the villagers worked with Yadfon staff to identify the steps for rejuvenating the coastal ecosystem and community welfare. Through a series of community meetings, villagers worked together to find solutions to their common problems, based on a combination of local wisdom and modern knowledge.

There are many examples of these community projects. In some villages, fishers whose incomes

had dropped dramatically initially raised caged fish. In order to save money, they worked together to find ways of making much of the necessary equipment themselves. To cope with the rising costs of fishing equipment, a group savings programme was started. An integral component of this programme was a fund through which families in need could borrow small amounts of money at low interest rates. At the same time, a co-operative buying programme was set up to enable fishers to purchase equipment and fuel at reduced rates. In addition, Yadfon and the village leaders began a programme for raising domestic animals to supplement the low fish catches.

While the villagers were combating the economic and social problems in their communities, they also began an active programme to restore and protect their natural resources. They replanted mangroves in large areas of land within or adjacent to the community forests, and declared seagrass conservation zones within the traditional fishing grounds. They also petitioned the local government to enforce a ban on the use of destructive fishing gear within 3 km of the shore. By empowering the communities to help themselves, Yadfon and the villagers have made impressive achievements in protecting coastal resources and the traditional way of life.

As the fertility of the sea increases, villagers have been able to capture greater quantities of marine animals for food and trade. From 1991 until 1994, there has been a 40 per cent increase in total catch. At the same time, there has been a substantial decrease in risk, time spent on the water and fishing expenses because the fishers are no longer forced to travel long distances or venture into the open sea. By the end of this three-year period, fishers spent, on average, three to four hours fewer per day in their boats and had a daily cost savings of 30 to 40 baht (US\$1.20-1.60). For the 500 families in the target area, the projects have provided a net increase in community income of 150,000-200,000 baht (US\$6, 000-8,000) per day, an increase of over 200 per cent.

Overall improvements in environmental quality can be observed through the tremendous increase in plant and animal life along the shores of Trang Province. The seagrass beds, having expanded to cover 133 sq km, are now densely populated with vegetation and attract many forms of marine life, from small fish and arthropods to reptiles and large mammals. In addition, the community mangrove forest system has grown from one forest of 587 rai in 1989 to six forests totalling 3,197 rai.

Catfish, thread fins and mullet—fish species that had once disappeared from the local waters—are now returning. Many species of crab, squid and shrimp can again be captured with simple fishing tools. Most importantly, marine animals which are almost extinct have returned to the waters of Trang Province, including sea turtles, dugongs and dolphins. News of the conservation of these scarce creatures has prompted a national response, not only of concern for their future, but also optimism that local efforts can be successful in effecting change.

In order to ensure the success of these efforts, villagers have needed to set up meetings for the exchange of ideas and to divide duties and responsibilities. This organization has taken place not only within one village but throughout the target area. From these activities, a group consciousness has developed, providing a network of involved citizens who now have greater power in preserving the public interest. Their effective organization was recognized at the national level when several of the target villages were chosen by Turakji Bandid University as model fishery villages in the management of coastal resources. These successes have forced local officials to pay attention to the needs of the villagers. Many officials are assisting them with programmes to support sustainable development initiatives and protect local resources.

The coastal resources conservation activities in Trang Province have been a source of co-operation and learning for governmental agencies, private-sector institutions and coastal fishing villages. Due to the trust and understanding that has been created, Trang has now become a centre for agencies and village leaders from other provinces to learn techniques for initiating sustainable development activities. Fishers have organized a 'Small Fisher Federation' in the southern region to discuss issues of common concern and to find solutions to regional problems. In the future, the villagers of Trang Province will play an important role in the co-ordination of grassroots conservation activities throughout the region.

The approach of sustainable fishing development in these villages has been regarded as a positive example for the entire province. Provincial leaders have seen the importance of the activities and have allocated funds for continued work in the conservation of coastal resources. Examples of the projects that have already been implemented with provincial funds are mangrove forest restoration, initiation of large-scale seagrass conservation zones, and coral reef conservation.

Trang Province has also supported fishers in the prevention of destructive fishing practices. The Fishery Office of the province has responded to the requests of villagers by prohibiting, in local waters, several such practices, like beach-seines and the use of harmful noise-producing devices. The Administrative Division and the Police Division have, likewise, provided resources and support for enforcing national regulations that ban the use of dynamite and cyanide.

Recommendations for the Future

The success of these conservation measures has confirmed that villagers have the knowledge, dedication and ability to manage coastal resources for

sustainable development. Beginning with the work in Trang Province, similar approaches have been extended to 10 other provinces in southern Thailand. Small fishers have proven to the government that they are capable of managing their resources in a sustainable manner, and they call on the government to recognize the rights of the people to manage these resources independently, according to their own local wisdom. By providing proper support for these activities, rather than attempting to place control of the development process in the hands of officials and businessmen, the government can reduce the cost of its programmes. More importantly, it would provide for the continuing survival of the nation's coastal resources—the fisherfolk's source of livelihood and an important component of Thailand's cultural heritage.

Coastal Area Degradation on the East Coast of India: Impact on Fishworkers

*Venkatesh Salagrama **

Abstract

This paper analyzes how the degradation of the east coast of India has affected the lives and livelihoods of fishworkers and their community.

A century of fisheries development has radically transformed a traditional, subsistence-based, livelihood activity into a commercial, monetized, business venture, where risks are outweighed by profits, which invariably leads to overexploitation.

Simultaneously, there has been a major shift in the gender roles within the sector, with traditional roles re-defined to exclude or marginalize women, in a sort of 'masculinization' of the sector, which thrives on profit-making at the expense of long-term sustainability.

'Degradation' is a social as well as environmental/ecological matter. The social aspects of the situation must be taken seriously, and people whose livelihoods have been 'degraded' by various processes cannot be expected to take seriously the idea of 'conservation'.

Keywords

Coastal degradation. Sustainable development. Andhra Pradesh. Orissa. India.

1 Introduction

There is a certain reassurance in being able to blame all ills that befall us on 'policies', the temporal equivalent of 'fate'. To err is human—to err consistently is policymaking. In the case of coastal areas, unfortunately, these sound bytes have an extra resonance. Throughout the 20th Century policymaking related to coastal areas has been characterized by an evangelical zeal to do away with traditional systems, and transplant 'modern technology' in their place. Policymakers, to stretch the 'fate' metaphor further, are like God—faceless, ubiquitous and impervious to natural processes of logic and empathy. Thanks to a policy mindset that has been ever so constant through the entire 20th Century, what was essentially a more or less homogeneous, 'I-mind-my-business-you-do-yours' community has been reduced to a state of dependence that puts professional beggars to shame. More dangerously, the processes that brought this about are very much alive and kick-

ing, and the degradation—physical, natural and human—continues. The marine fishing communities are India's version of the American Indians and the Australian aborigines.

Physical degradation of the coastal environment is just one of the many outcomes of the policies pursued over a century. However, the degradation of coastal areas is itself a huge field of enquiry that needs a multidisciplinary, multisectoral investigation, and I shall confine myself here to the fisheries sector alone, on the—hopefully mistaken—assumption that the same experiences must have been repeated endlessly in all other sectors, with similarly drastic consequences for the poor. It follows that—though I am aware of some positive efforts in this area—I would concentrate more on what went/is going wrong. I would confine my observations to the east coast of India, more particularly to the Andhra Pradesh and Orissa coasts, although I have to be more arbitrary with the documented sources.

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2 A Brief Overview of Indian Fisheries Policies

From a superficial glance, it is possible to see four phases of fisheries policymaking in India, which show the evolution of a consistent mindset through the years, reflected not only in what policies were enacted, but also in what were not, which legislations were implemented and which were not.

The first 50 years of organized fisheries development in south India, which started in late 19th Century with the establishment of the Department of Fisheries (DOF), was more or less set in the familiar colonial mode. The pioneers found that “the Indian seas swarm with valuable fish”, but the traditional fishing practices “bear about the same relation to British fisheries, as a catamaran does to a steam trawler”, and it was necessary “to stimulate and assist private effort, whether by individual capitalists or by associations, under proper regulations for the quality and wholesomeness of the resulting food supply, and the safety of the salt revenue” (MFB, 1915: 2-3). The existing fishing industry was “in the most primitive condition, quite undeveloped in any of the modern methods and allied industries, bound by custom and ignorance, and entirely without initiative in new departures; it is the government officers only who have a larger knowledge and a certain degree of initiative, and it is, at present, for them to lead the industry and the men—this is the *raison d’être*, and this only, of the Government Department” (MFB, 1916:2). Here is the birth of the philosophy of reductionism that manifested itself in so many hues of revolution (the Blue, Green, White Revolutions come immediately to mind) and the puritanical zeal to show the path of salvation to the ignorant heathens, which was set in stone in the latter period.

It must be admitted that the colonial administrators had also the interest to study, describe and understand in great detail the traditional systems and practices, although it was done with a certain sense of superiority to the ‘natives’. A part of the object of documentation was to ‘prove’ how ignorant/primitive/backward the ‘natives’ were (Stirrat, personal communication). Be that as it may, there is no denying that the reports they had given of the existing conditions, systems and practices continue to remain relevant, not the least because their post-colonial successors never felt constrained for lack of a more up-to-date form of such information to take decisions. There was a social policy component to the DOF’s work, which manifested itself in the ‘annual anti-malarial operations’, setting

up village schools and co-operative societies (MFB, 1933: 39-49), although it is a bit unclear as to how the implementation of the two—social and fisheries policies—worked in actual practice.

The second phase began in the 1950s, with the tripartite agreement between the United Nations, the United States (US) and India, which resulted in the Technical Co-operation Mission (TCM), under which, “costly equipment such as fully equipped fishing vessels, ice plants, freezing and canning equipment, fishmeal plants, nylon nets and twine, fishing hooks, diesel engines, winches and gurdies and a host of other items costing several millions of US dollars at almost throwaway prices”. It was for the first time that “entrepreneurs realized that if we wanted to develop our fishing industry, we cannot rely on the small boat and inadequate fishing gear and that we must invest and get sophisticated equipment” (GFC, 1994:4). This was the period when the first phase of globalization of the Indian seafood industry started (although the term ‘globalization’ was to be coined much later). The fisheries development philosophy got reduced to a more prosaic and easily digestible doctrine of ‘growth and foreign exchange’. ‘People’ were more generally defined to include a broad category of individuals, whose qualification to enter the sector was their ability to invest in the new technology. Seeds for the industries of the future—trawling, industrial fishing and aquaculture—were sown here and supported with generous subsidies and loans and so were, naturally, the concomitant pips of coastal degradation. To be fair, the increased impetus to mechanization and motorization was to reach where the traditional boats could not, but in practice, this never happened. The artisanal sector was expected to ‘dissipate and merge with’ the mechanized sector, and in order to speed up the process, it was more or less neglected (Bavinck, 2001:65). The result was that, as one World Bank study (1992:15) noted, “by the mid-1970s, it had become increasingly clear that, in general, the small-scale sector was not only failing to benefit from fishery development projects but was, in several cases, actually being damaged”.

The next phase began sometime during the late 1970s, and lasted until the early 1990s, and this was the period in Indian fisheries on which the sun was not supposed to set—we were the ‘sunrise’ sector, and virtually everybody, including the small-scale fishers, flourished as a result of technology, more technology and even more technology, which was made available by soft financing the capital needed through special fund commit-

tees. This was the most active period of the 'Blue Revolution'. The keywords here are investment, technology, growth and foreign exchange. Have investment, will fish. A survey of the fishery sector of India conducted for the World Bank by Srivastava et al (IIM, 1990), which has influenced a great deal of fisheries development programmes throughout the 1990s. showed the way forward: the project profiles it prepared to develop marine fisheries included (i) increasing inshore fish production by mechanized fishing boats; (ii) acquisition of deep-sea fishing vessels; (iii) fishing, processing and export of tuna, squid and cuttlefish; and (iv) establishing new fishing harbours and strengthening and expanding existing ones. Development of brackish-water aquaculture, cold storage chains for fish marketing, individual quick-frozen plants, processing of by-catch into frozen, canned and artificial dried products, and putting up ice plants are some of the other projects suggested.

Even during this period, there was degradation, but it was drowned in the noise of bulldozers mowing down mangrove forests, making way for aquaculture ponds, and the high horsepower engines taking boats faster and faster. Of people themselves, very little is heard, and a publication of the Indian Council for Agriculture Research (ICAR), revised in 1990—nearly a century after the mission to develop the heathens began—has this to say of the fishers: "The community, as a whole, is extremely conservative and largely illiterate. The craft, gear and other equipments used are, by and large, primitive, and, consequently, according to modern standards, the return per unit of effort is relatively small. Being economically and socially backward, comparatively ignorant and ill-educated, most fishermen fall victims to the many evils in society" (ICAR, 1997: 769-770).

The last phase began in the early 1990s, coinciding with the second phase of globalization that was ushered in with more vigour, wider reach and bigger impacts for the country as a whole. Management—a word that tries to be all things to all people—is apparently the keyword for this Age, and personifies the contradictory impulses that push and pull the Establishment. All the 'hi-tech' chickens—deep-sea trawling (see Vivekanandan et al, 1997), aquaculture (this one does not even need references), mechanized fishing (see the Telugu newspapers for the best part of August 2001, for reports on agitating trawler associations demanding, among other things, increased diesel subsidies, and 'increased prices for their catches')—have come to roost, but, at the same time, old habits

die hard, so you have policy documents such as the Vision 2020 document brought out by the Government of Andhra Pradesh (GoAP, 1999), reaching for the stars: "By 2020, Andhra Pradesh will have a thriving fisheries sector", it enthuses. "Fish production will be four times its current size, reaching over 10 lakh tonnes a year. The sector will boast of thriving, diversified exports and provide ample stocks of a highly nutritious food to the people of AP and other States." Much like a drug addict who wants to be weaned away from drugs, but cannot resist 'just one more drag', the policies alternate between 'increasing the foreign exchange' and 'curtailing overexploitation', the haves often getting the benefit of the first impulse and the have-nots reaping the rewards of the second.

3 A Century of Policies and Their Impacts

What have we got to show in return for a century of 'development'? There has indeed been a remarkable growth. Fish production increased by leaps and bounds. Aquaculture production increased, so have the exports and foreign exchange. The number of mechanized and motorized boats increased, while there has been a very steep decline in the non-motorized traditional boats, so people have indeed taken advantage of the technology. Fish that had been thrown back into the sea for lack of demand until a decade ago now fetch unbelievable sums. The insulated fish transport vehicle is the symbol of new prosperity. It is everywhere, the sign of progress reaching the unreached, spreading the good word about using ice and paying a good price to the converts It is said that the minute an insulated vehicle arrives at a landing centre, fish prices double, and that fishers would rather throw away their fish than sell to anyone else. (For a more detailed discussion on the changes in the marine fishing sector, see Integrated Coastal Management, 2000a.)

So what is the problem? Why do fishing fleets spend more time at the harbour than at sea when the fish catch graphs keep climbing new heights every year? Why do the vast aquaculture ponds stretching into eternity look for all practical purposes like deserts, when the foreign demand is growing so handsomely? Why do mangroves look more like phantoms of dead trees, and people—even the rich folk—look scared all the time? If the increased fish catches and foreign exchange returns shown in the statistics have not gone to the fishers,

where have they gone? If everything is going so well as claimed, how come there are more regulations now than at any time since the fisheries institutions began?

Unarguably, there has been a serious decline in the coastal environment. It is reflected in the declining quantity and variety of fish catches, decreasing fishing days, increasing conflicts and the largest ever number of destitute women and old people in fishing villages. What caused the degradation? No one quite knows—some blame it on fishers and their fishing practices, some on overpopulation, some on faulty statistics, and some on the fish themselves, but all agree that there has been degradation—statistics or no statistics—and that “something must be done about it.”

And, when people do get that concerned about the environment, they become very evangelical and very possessive to the point of excluding the affected people themselves from their activities, which is exactly what has happened This dispossession is done very logically and rationally, and is eminently justifiable, whichever way you choose to look at it. The operation may or may not be a success, but there is no denying that the patient will be dead at the end of it. I would go a step further and argue that the so-called development efforts to reduce coastal degradation and protect the ecosystems—both by the government and the NGOs—are as much a cause for concern as the degradation itself.

But first, I would like to explore a few strands that I believe are important. A century of fisheries development has brought about a radical transformation of a traditional¹, subsistence-based, livelihood activity into a commercial, monetized, business venture, where risks have to be weighed against profits, which invariably leads to overexploitation.

Alongside, there has been a major shift in gender roles in the sector, with the traditional roles redefined to exclude or marginalize women, in a sort of ‘masculinization’ of the sector, which thrives on profit making at the expense of long-term sustainability.

¹I am in full agreement with the view that the use of the word ‘traditional’ in relation to the communities is a misnomer, which, as Stirrat says, is “a modern construction and implies unchangingness” and adds, “I suspect that there were lots of change in the past and that 18th Century fishermen were probably sitting around moaning about how things have changed from past tradition.” So also with the word ‘subsistence-based’. As Vivekanandan et al (1997) and Stirrat pointed out, fishermen have always been producing for exchange unless they were only part-time fishers. Fish has to be exchanged for other items: it is not like agriculture where one can consume one’s production much more easily. I used these words here for two reasons: one, because they have increasingly come to imply artisanal, small-scale, more or less community-based and -orientated activities, and, two, because I could not think of suitable alternatives.

²In a recent ‘participatory’ wealth-ranking exercise conducted in four villages, I witnessed great debate amongst the participants as to who—boatowners or crew members—were poorer, and in every case, there was an impasse.

4 Commercialization of Indian Fisheries

To begin with, everything in the fisheries sector was traditional and small-scale. The fishing communities were, by and large, homogeneous. There was a small craft-owning class and a large worker class, but, economically, there was little distinction between the classes: the difference in income between the owners and the crew was not all that great to set them apart.² In many areas, traditional management systems held power over the community. Fishing was confined to the waters close to the villages, and most fish were sold within a short radius from the landing centre. Men’s roles were confined to fishing, while women did the processing and trading, besides running the household [see Bavinck (2001), Suryanarayana (1977), Schombucher (1986) and Tietze (1986) for a more detailed description of the small-scale fishing communities of the east coast.] Overall, it was a subsistence fisheries, where everyone clung together for survival.

That is, until motorization and mechanization came along. The fishers contend that motorization came in at a time of need for new fishing grounds. To that extent, it was a right thing at the right time, and the fishers took to it with alacrity. Moreover, traditional fishing was a manual operation requiring much hard work and fishers widely welcomed the motorization programmes.

The 1980s, as mentioned, were also the Golden Age for the fisheries sector, and the motorized boatowners reaped the benefits of a huge increase in the demand for seafood, and the number of fishing boats burgeoned as well. It was also the time when the new fibre reinforced plastic (FRP) boats, plywood boats, ‘disco’ nets (trammel nets) and longlines were introduced to great enthusiasm, and they did stand up to the expectations for a time. Ice was beginning to come into the fishing villages, making a huge difference to their returns. It was easy to assume, as many did, that if things became hard, all it required was to ‘diversify’ into new boats, new nets, and new fishing grounds. This

false security, and the investments that fuelled it, have in turn contributed to the fall subsequently.

It was not until about the early 1990s that people seemed to realize (or may be the heavy subsidies used to promote motorization programmes acted as blinkers) that motorized fishing involved a certain cost—for fuel, for instance, which was not there in traditional fishing. While a traditional fisher can rightly feel that whatever he caught was his, the motorized boatowner has to pay the lion's share—more so in these resource-depleted days—to run his engine. Even a handful of fish caught by the traditional boat would at least see to the family's meal for the day, while even a good catch might not leave sufficient surplus for the motorized boatowner to take home. Moreover, he cannot take his boat out to sea whenever he feels like it; he has to be absolutely sure that he would at least get enough to pay the running costs, so the number of days of fishing has come down too, while—to cut costs as well as to travel farther out—the fishing duration of each trip had gone up. A motorized boatowner—and there were more of them than the non-motorized ones by the early 1990s—found himself weighing costs with benefits in strictly monetary terms, before 'investing' in a new trip (see Nayak (1993); State Planning Board, Kerala (1993); IMM, 1993; PCO and SIFFS, 1991 for a more detailed analysis). It might be mentioned here that, when it comes to the documentation of the consequences—counting the dead after the battle—those who drafted the 'folly-cies' in the first place seldom do it.

Commercial enterprises, in order to maximize returns on their investment, have to concentrate on the extraction of commercially valuable species—the complex relationships within the aquatic ecosystem are ignored. Investments were made on specialized fishing gear to catch only the more expensive varieties and not others. A number of species on which the communities depended have become by-catch or 'trash' and dispensable.³ Smaller and smaller mesh sizes have come to be used. The average number of fishing nets per boat, the engine horsepower and the duration of fishing have all increased in an inverse proportion to the catches. Not surprisingly, so, too, have the debts to the local moneylenders and the fish trader-financiers.

³In due course, the fishers did begin to catch and land the so-called by-catch both in the mechanized and the motorized sectors, but this was mainly to supplement the shortfall in the catches of the main species. There are studies indicating that nearly 60 to 80 per cent of the by-catches were composed of juveniles of important species (Sujata, 1995 and 1996).

5 Masculinization of Indian Fisheries

The fishing sector has evolved in such a way that there was a clear division of labour between men and women. The men, generally, did the fishing and handed over the fish to their women folk for sale. And the women sold as much of it as possible in fresh condition, then processed it by drying and salting, and generally held the purse strings, managed the family, procured the daily necessities such as firewood and so forth. The Women in Fisheries series of dossiers from the International Collective in Support of Fishworkers (ICSF) gives a good picture of the role that women played in the fishing sector and the impact of changes on their livelihoods and social status.

The history of the 100 years of fisheries development in the country is also a history of 'masculinization' of the sector where, with increasing inflows of technology and outflows of fish, women found themselves at the receiving end, both literally as well as figuratively. With fish increasingly being sold off at the point of landing to the new categories of traders—commission agents, financier-traders, exporters—the fishermen no longer need to channel their fish through the women. Transactions are mainly in cash, and pass directly from trader to the fishers, whose mounting investment needs—for engine repairs, replenishment of nets, repair of boats, advances to their crew, cost of fuel, ice and other necessities of a modern age—leave very little for meeting the household needs.

Most fish having found a ready market elsewhere, women who depended on traditional processing for a livelihood find it increasingly difficult to obtain fish. While, on the one hand, the fishers try and catch only the more expensive varieties, thereby reducing supply, on the other, the increased competition for most fish for export and from other users makes them so expensive that the processor-women can hardly afford to buy them. For households that have an earning male member in the family, the returns from sale of fresh fish would have amply compensated the loss of processing income (although, in social terms, it still is at the cost of the women), but for the single women-headed households (who can constitute nearly a fifth of the total households in a fishing village), this must mean a serious loss.

An important area where the women had a role was in their interactions with the coastal

commons to meet many of their, and the household's, needs—village lands (for grazing, drying fish, washing and drying clothes, as lavatories, etc.), mangroves and other wild growths (for firewood, grazing, thatching their houses, etc.) and open beaches (for drying fish). The worth of the coastal commons, which had hitherto been considered as fallow and allowed to be used by the communities for ages, became manifest with the arrival on the scene of new activities such as aquaculture, and the State promptly stepped in to restrict access.

Considering the dire straits that the small-scale fishers find themselves in, it is not too far-fetched to use the ecofeminist framework, which suggests that women identify with an integrated ecosystem managed for multipurpose utilization, whereas masculinist policies have often tended to be reductionist and ecosystem independent ones (Shiva, 1999:42), and that the marginalization of women from their productive roles has had more negative consequences than those related to their livelihoods alone.

6 New Players in Coastal Areas

Increased industrial activities, upstream effects, urban growth, aquaculture and competition besiege coastal areas. The degradation of the coastal environment as a result of these developments is too well known to merit a lengthy discussion. Suffice to say that a large part of the degradation in the coastal areas is directly attributable to many of these new 'developments'....

What is it about the coastal areas that invites people to do all sorts of things to it? Or is it that the ecosystem is more sensitive than others, and is more easily upset? More likely still, being at the downstream of all development, the coastal area acts as a sink both for the effluents as well as the people. Being the home to a more diverse range of primary occupations than others—it is after all the one ecosystem where the features of all other ecosystems are represented—it attracts a proportionately larger number of people. In a piece of research (ICM, 2000b) on what sets a coastal village apart from a non-coastal village, an important point made by the people was that while more resources are open-access (or assumed to be open-access, as Bavinck (2001) argues) in the coastal areas, in non-coastal areas, assets are mostly privately owned, or the village holds exclusive control over the common property resources, largely curtailing open access. "Private property is protected and

maintained by its owners, who, after all, obtain benefits of any investment they make. By way of contrast, those depending on common property resources are locked into a system in which it is only logical that they increase their exploitation without limit" (Acheson, 1981).

To take the example of the eastern coastal States of India, the coastal areas are far more naturally fertile and productive than the non-coastal areas, which act as a magnet for people. Nearly half the Indian population apparently lives in coastal areas, and the coastal States have population densities ranging between 600 and 2,000 per sq km, as against the national average of 300 per sq km. Naturally, infrastructure is better developed, and the availability of labour and infrastructure, with the enticing prospect of open-access regimes, attracts investments. All industries are polluting, to a greater or lesser extent, but it appears to me that the more polluting ones always end up near the sea. Fertilizers, nuclear power plants, and fossil fuel extracting and refining units, are some of the more frequently visible industries in the coastal areas. Within the coastal areas, the land closer to the sea is more saline and naturally less fertile, which means that buying large tracts of it close to the beach is not as expensive as procuring it elsewhere.

Perhaps the proximity of the sea, with its immensity, gives people the confidence that they can do anything and get away with it. Until recently, no self-respecting fisherman—however big a mansion he might build for himself—would ever deign to use anything other than the beach for a lavatory, because "the sea takes care of it all", as one fisherman elder told me. Take this philosophy to a sufficiently high degree, and you will end up dumping your urban wastes, industrial effluents, aquaculture and agriculture wastes, and even nuclear wastes—virtually anything that you cannot otherwise dispose off—into the sea, because they are no more than the proverbial drop in the ocean. Plus, for the policymakers, who have never recognized the existence of use rights or traditional tenurial arrangements in the coastal areas, at least officially, the sea, the beaches, the mangroves and the creeks belong to no one in particular; so there is nobody to complain about degradation either. In this respect, as in a few more, the one other ecosystem that has some parallels to the coastal one is that of forests.

There is no denying the fact that the coastal areas are prosperous compared to inland areas—as evidenced by the fact that non-coastal districts in both Andhra Pradesh and Orissa are perpetually drought-prone. Travel writers like Paul Theroux

have noted the remarkable change in scenery from the inland areas to the coastal ones in these States. But this broad generalization of the prosperity in the coastal areas masks the more important fact that absolute poverty is also very high, and that coastal areas are home to large numbers of people who are as poor as any in any other ecosystem. Ongoing research in the coastal villages confirms the truism “Being poor in a rich neighbourhood is worse than being poor in a poor neighbourhood.”

7 Impacts on the Fishworkers

There are creek-based villages where, for weeks at a time, fish are seen floating belly-up as a result of the periodical discharge of industrial effluents. Villagers cannot send their cattle to graze outside the village because what they had assumed for a long time to be village commons were not commons at all, but belonged to a prawn aquaculturist. Mechanized boats seldom fish beyond a stone's throw from the shore, using mesh size of less than 10 mm at the cod end, often overrunning traditional nets, and capturing huge quantities of juveniles, which feed poultry feed mills and aquaculture ponds. In some areas, the sites that the fishing villages currently occupy—Pentakota (Puri), Chandrabhaga (Konark) and Sandakhud (Paradeep), all in Orissa, to cite some examples—are ‘taken over’ for development of tourism, ports, industries or aquaculture hatcheries. Natural water bodies like the Chilika lake are dying, and the livelihoods of nearly 150,000 fishers are at stake.

There is an increasing uncertainty about fishing operations, which are also very expensive. Until recently, most boatowners, when they saved enough, added a new boat to their fleet. A boat—like jewellery and bank balance—was both an investment and a saving, and the number of boats a person owned determined his social status. Not any more—like a family-planning advertisement, it is ‘one boat per family’ now, and not only because a plastic boat costs three times as much as a traditional boat. Nowadays, making investment in a new boat is an unwise act. It is not that there is no money to be had in fishing, or that the fishers do not occasionally make a killing. It is the uncertainty that pervades the whole activity that encourages them to invest in more reliable assets such as agriculture and jewellery.

Most people—including many fishers—argue that, while there has indeed been a steep decline in catches, it has been more or less compensated by

a comparable increase in prices, and the overall impact on the fishers was more or less balanced. The hollowness of this smug assertion is already being felt in many villages in some of the poorest districts on the east coast of India like Srikakulam and Ganjam, to cite a couple of examples.

Weakened as the fishers are from increasingly unsustainable livelihoods, from alienation, from lack of use rights, from loss of common property resources, and from lack of easy alternatives, it is no wonder that they are taking to increasingly criminal occupations. Knowing fully well, and even insisting that activities such as shrimp-seed collection are harming the resources very badly, they still continue with it, despite bans, not because it is lucrative (at 5 paise per piece, it cannot be), but because there is no alternative. There are reports—unconfirmed but sufficiently widespread to be credible—that loss of occupations is leading women in fishing villages to turn increasingly to prostitution.

Fishers in Srikakulam district migrate en masse to Gujarat to work as crew in trawlers under conditions that are pathetic. Fishers in Ganjam District are not so lucky—or may be more lucky, depending on how you look at it: they simply sit at home and play cards, while their women search for work as agricultural labourers, building labourers, sweetmeat sellers—all occupations that were considered to be beneath their dignity less than a decade ago.... Most women reported that their income once complemented that of their husbands; now it is the mainstay of family income. Moreover, most women reported an increase in liquor consumption by their husbands. Fishers in Krishna District work as aquaculture farm labourers in Telangana Districts of Andhra Pradesh for six months a year.

One striking example of the level to which resource constraints have become serious comes from the increasing number of conflicts within and between the communities—between the small-scale fishers and the mechanized fishers, amongst small-scale fishers themselves, between fishers of different villages, different States and between fishers and non-fishers. While geographical migration in the fishing communities—from area to area, State to State, and country to country (there had always been a steady stream of Indian fishermen who migrated to Burma, Singapore and Malaysia for a long time)—is a given fact, there are indications that, increasingly, the local communities are not so well disposed towards the migrants. There have been instances in the last two years when fishers from certain parts of Andhra Pradesh migrated to their

habitual destinations elsewhere, they faced such serious opposition from the local communities that they had to turn back. The fishers in the Godavari delta increasingly wake up to the fact that the creeks in which they had always fished were no longer to be open-access, that the traditional use rights belonged to another village. The increased conflicts have invariably led to violent clashes and destruction of boats.

Traditional activities such as fish smoking in the Godavari delta area are dying out. It is only a matter of time before the last fish is smoked. Lack of fish and firewood together took away at least about 1,500 livelihoods, besides countless others like smoked fish vendors, transporters and so forth. Fish drying still continues, but is a pale shadow of its glory days. There is neither fish nor the place to dry it on in most coastal villages—the place having been eroded (Uppada), or taken over by private industries for setting up power plants, shrimp hatcheries and so on. Shore-seines, each of which provided livelihoods for more than 50 families, are dying out too, as are traditional wooden boats and catamarans. When a BBC team wanted to make a film of the traditional catamarans of Andhra Pradesh, it took them about a week's running up and down the entire coastal length before they could find a place where there were enough catamarans still left.

The fate of the single-woman headed households is still worse. The women in six villages where a piece of research was conducted in Andhra Pradesh and Orissa reported that the number of days when they go food-less had increased drastically over the last three to four years. When one woman respondent, who was being interviewed at her home, was asked why she was not making haste to make her meal, she replied that there was nothing to cook; there had not been anything on the previous day either. When I had first met this woman nearly a decade ago, she was a reasonably well-off fish processor, employing two others to help in the processing activity. Her children have grown up, in the meantime, married and moved away, and earn barely enough to feed their families.

The case of the burgeoning destitute old people in the fishing village is perplexing. Having worked all their lives, they have reached a stage where they cannot work. But their children have moved away, their life savings hardly amount to anything, and they live pathetic lives. How could, the question arises, a community that had worked out every single intricate detail of negotiating every variety of

waves at sea forget to put in place basic systems to ensure insurance for its old people? A little research indicated that this state of affairs is a recent phenomenon, and has a lot to do with disintegrating social structures in the villages. Community and family relationships are at their weakest, and the joint-family system—that bedrock of rural India—is dead as a dodo. The livelihood and social security systems in the coastal fishing villages are in disarray, and the numbers of utterly destitute people are increasing, much like the mythical fish catches in the annual handbooks on fisheries statistics.

Fishers eat a part of their catches and sell the rest, right? Wrong. The catches they get are so few and precious that they cannot afford to eat them anymore. In most fishing villages in Andhra Pradesh, there is a new category of fish traders, who bring cheaper fish from a distant major fishing-landing centre for sale in the villages. If the trawlers have reduced discarding by-catch at sea, it has to do with the increased consumption of the varieties of fish that would have been rejected out of hand a decade ago. Most fishers reported regularly consuming beef—a taboo item in many fishing castes, but far cheaper than the fish they catch.

So, why don't they get out? If they don't have bread, why can't they eat cake? For many development practitioners illiteracy in the fishing communities is a favourite axe to grind, and a wonderful excuse for not getting results. Forgetting the glut in the employment market for educated people, the more important question remains: how can anyone plan long-term when the short-term needs are not met? The midday meals schemes did seem to attract a number of children to schools, but the schemes themselves were as unsustainable as any fishing activity.

And the list can go on and on.

8 Responses to the Issue of Coastal Degradation

The government and the private sector—and, increasingly, the NGOs—have a far more decisive influence in shaping or changing the coastal livelihoods now than at any time in the past. This has, ostensibly, to do with conflict resolution, conservation and management of resources, and sustainable development in the coastal areas.

There have been, typically, two responses to the issue of coastal degradation: one, as already dis-

cussed, was the imposition of regulations to preserve the natural resources from the deprecators, which was more or less the stand that the government took, and the second, providing alternative sustainable livelihoods for the communities, which was mostly, but not solely, taken up by the NGOs.

Why this sudden interest in 'management', after spending nearly half a century promoting the same processes that were responsible for degradation in the first place? Two closely related things brought into sharp focus the fact that things were not going as planned. The first was, of course, aquaculture, which suddenly became a 'capital market' subject, and then a legal issue, and needed—like an errant child—nurturing to be made more responsible Its importance as a foreign exchange earner as well as the controversial status it achieved were justifications enough for the active involvement of the fisheries administrators. The second was a syndrome of issues—overexploitation, resource conflicts, pollution, destitution and environmental degradation—frankly, things that the DOF could do without. Anyway, for the fisheries establishment, which, like Alexander, was moaning that there were no more lands left to conquer, and was facing serious questions related to its continued survival under the structural adjustment programmes, these were a godsend to reassert itself.

Though few of the State DOFs ever accepted that there was any decline in the fish catches—either as a whole or species-wise—that did not deter them from take some serious action about declining catches.⁴ Thus was born Fisheries Management. The government's answers to the problems of degradation were pat, if not typical: if there is a decline in capture fisheries, let's have alternate sources of production—to wit, promote aquaculture, and lots and lots of it, even if that is going to have other, more serious, impacts in the long term (in the event, it turned out to be a problem even in the short term). And, for everything else, there is the "Off with his head!" solution from Alice in Wonderland: If we want to protect the fish resources, let's ban fishing in the mangroves, ban entry into mangroves themselves, ban fishing for shrimp seed (which, incidentally, was something that 'we' taught 'them' even until early 1990s, when we banned it as ecologically harmful), ban collection of mollusc shells, ban fishing during certain parts of the year, in certain areas round the year, and so on. For restoring natural balance (which means protecting dolphins and turtles and such ex-

otic species only, whose foreign exchange value is not quite as good as that of shrimp or sharks), let us declare 'protected areas'. In effect, every problem is met with either a ban, or a regulation of access, to everything that the coastal people have depended on for their livelihoods for centuries. All very noble, as Mark Antony would have said, but very drastic on the fishworkers for whom this was rubbing salt into the wound: there they were, worried stiff over the lack of fish, and in comes a regulation to reduce their access even more.

What the government's efforts at regulation have meant in practice was to reduce the dependence of the coastal people on the natural resources, like fish, mangroves and shells. Lest this gives the impression that the traditional users have found alternative means to obtain the same services, let me hasten to add that, if anything, the need to depend on the traditional resources for food, firewood, house-building, income-generation and so forth has remained more or less constant, if not actually increased. What it means is that there is a decrease in the access to natural resources that provided many of their basic needs, affecting their quality of life, thanks to the zealotry of the government to ensure the long-term sustainability of the sector at the expense of the short-term needs of the people, the needs being such inconsequential and old-fashioned ones as food, clothing and shelter. It also does not matter that their actual contribution to the degradation may be only a fraction of that wrought by the growth-and-foreign exchange-led technical innovations'.

There is a big dilemma before the voluntary sector: while it is politically correct to be pro-poor, it is politically even more correct to be pro-environment, and the problem arises when it comes to deciding between two politically correct things. This is often resolved by following the leader, that is, the funding agency. I know at least one agency in Orissa, which, as a result of some misunderstanding with its funding agency, realized suddenly that it was more pro-poor than pro-environment midway through a pro-environment project, and switched sides almost overnight.

Are there no positive interventions then? There certainly are. The so-called alternate income-generating (AIG) programmes fall once again into two very conventional streams. The first strand follows the 'increased income from fishing' line, that is, the fishers, being fishers, should find a solution

⁴In my experience, very few people were more candid in concurring with Mark Twain's hierarchy of falsehoods—Lies, damn lies and statistics—as the people responsible for compiling fisheries statistics.

to their problems within the fisheries sector. If fishing is poor in the near-shore waters, they should be given bigger boats to fish farther off. As a Government of India paper presented at a workshop in 1997 (BOBP, 1999) says: "To further this objective (of regulating the growth of mechanized fishing vessels and channeling their growth in directions which would increase production from areas presently untapped), it is proposed to go in for a new generation of fishing vessels between 15-20 m OAL, which would be able to tap waters of about 150-200 m depth and go on voyages up to about 15 days.... This would also help shift the fishing effort from the inshore/near shore areas to offshore areas within the EEZ."

Increasing returns for the catches—value addition—is another important AIG activity. If there are no fish for drying, let the women make fish wafers, fish cutlets, fish pickles and sell them in the urban and international markets and make a fortune, although, after more than a decade of training and 'test-marketing', I have yet to see one successful production and marketing activity actually taking off.

The second strand follows the "If they don't have clothes to wear, let them learn to sew" line, and wherever you go, you cannot but find the same categories of AIG programmes. While there has been an increased masculinization of livelihoods in the sector, there has also been an increased feminization of development effort, with the interventionists swooping down on the women, teaching them about the importance of 'group ethic', and so forth. Ostensibly, this emphasis on women is to help them assert themselves, which, in the case of fishing communities at least, is partly bogus, because here the women have traditionally been more assertive than elsewhere; this misplaced zeal to 'empower' them does not exactly suit the context. Moreover, when it comes to group ethic, the women have a lot more to teach us than the other way round—look at any artisanal activity, and you will find a group action in place. In the end, this interest in women boils down to the fact that they are more or less captive audiences for the development show; they are more reliable in repayment of loans and, hence, make good 'beneficiaries'. The only real beneficiaries appear to be the so-called AIGexperts, since renamed 'sustainable livelihoods experts', to keep up with the times, who indeed have tapped a very sustainable source of livelihood for themselves.

That most of the programmes—either government-supported or NGO-sponsored—go by

the claims of being sustainable, equitable and participatory is another irony. What, pray, would a fisherman or woman hope to gain by planting thousands of mangrove saplings in a barren area, which does not even belong to them? So why do they do it then? What perks are attached to the planting of mangroves, and how sustainable are the perks themselves? If sustained efforts over decades could not make the mechanized boats keep off the inshore waters or use a slightly bigger mesh, what earthly reason could convince the hand-to-mouth fishers to stop fishing for long periods in the interest of restoring the populations of Olive Ridley turtles or planting mangroves to ensure long-term ecological balance of the ecosystems? As Acheson (1981) asks, why should fishermen conserve when there is no way the benefits can be reserved for themselves?

Granted that the 'ban regime' was imposed with altruistic motives to save Mankind, which includes the small-scale fishworkers as well, a few ticklish questions crop up: such as, how many mechanized boats have been caught in the last more than 10 years since the Marine Fishing Regulation Acts have been enacted by each of the coastal States in comparison with the number of small-scale fishers fined for fishing during a seasonal ban period? How many aquaculturists have had their farms damaged for transgression of boundaries, and how many shrimp seed collectors have been caught and fined for seed collection? How many firewood collectors were made to pay fines, besides forfeiting their wood, and how many factories and aquaculturists were fined for releasing their effluents into the creeks? The answers may not always satisfy our claims of being 'equitable'.

Most of the management efforts are claimed to be completely people-centred. In a strictly participatory exercise, agenda setting, problem identification and project activities should all have the participation of the communities. How many villagers would have set mangrove conservation as their top priority that so many participatory joint forest management (JFM) committees have sprung up all over the place? The goal of universal peace and harmony in the coastal areas is sought to be achieved by a sort of carrot-and-stick policy. Participation involves complete acquiescence with our agenda, and is facilitated by giving carrots such as construction of community halls (for more participatory exercises), provision of loudspeakers, marriage halls and chairs and tables, besides more substantive ones like houses and boats, on the understanding that the community members would behave themselves and keep off the mangrove forests.

Those who took, took everything they received and asked for more. And those who had no inkling of the deals struck on their behalf received the stick. A question that had never been asked was whether what was being given was a good substitute for what was being taken away, that is, the right to mangroves, and whether what was given was acceptable to those whose livelihoods were going to be the most affected in the bargain. Who actually participates, thus, is a billion-dollar question, and invariably, women and the real poor who depended on the mangroves for centuries are excluded, as I can vouch from my personal experience of attending a few JFM meetings.

It is easy to regard a community as a homogeneous unit, almost like a family, where the village elders, acting as family heads, discuss everything with all family members and share everything equally with everyone. As authors like Dietrich and Agarwal point out (Menon, 1999) in relation to feminist studies, this uncomplicated and unproblematic acceptance of homogeneity in the 'traditional' communities is fraught with serious problems, but that does not deter us too much. The co-option of the communities, while achieving a semblance of participation, is achieved by reinforcing the stereotypes, by buttressing the local power structures and by excluding most stakeholders who would be affected from the decision-making processes. Nicholas Hildyard et al., in Cooke and Kothari (2001: 56-71), do a comprehensive job of evaluating 'participation' in the JFM programmes in India.

No wonder, then, that, whenever a suitably official-looking person enters a fishing village these days, the looks are either greedy (for the carrots) or downright hostile (to the stick). Many single women-headed households reported that they kept their distance from the government officers because they feared them, preferring to forgo assistance in times of cyclones, for instance.

Misplaced zeal for ecological conservation, without looking at the impacts of such programmes on the people concerned, not only have serious consequences for the people, but undermine the programmes themselves in the short run itself. As Acheson (1981) notes, the lack of support for fisheries management and conservation efforts "stems from the fact that fisheries management often has deleterious effects on people in the industry that have not been taken into account by either the economists or the biologists who have been responsible for developing management plans." He goes on to provide many examples from developed

countries that show that many of the regulatory practices result in "extreme inequality", "aid owners of large, modern offshore vessels and penalize the inshore fleet", and the "current efforts to manage fisheries have not succeeded very well", and are "doomed to failure", not only because they have "created conflict, but have also been ineffective since fishermen have proved very adept at innovating their way around them ..." Obviously, we are treading a halloed path here.

9 What is to be Done?

After all this axe-grinding, what do I have to offer? How do I think the world can be saved? I am afraid whatever I have to offer is my solution to the problem, and my ideas are liable to be as faulty as any that I have discussed so far. My only submission is that enlightenment does not always come in a blinding flash, nor is it an individual achievement. I am aware that in every situation where there are losers, there must be winners too, and more than black and white, it is the grey that permeates reality. It is only right and human that everyone should try and make the best of the opportunities available to them, but if these opportunities always favour the same set of people, particularly at the expense of another, concepts like "striking a balance", "taking the right perspective" and "achieving consensus" are almost meaningless. I take comfort in what Robert Chambers (1983:85) says of overestimating the rural people's knowledge: "These positive biases may be no bad thing. The colonizing force of outsiders' knowledge is programmed to override and bury other paradigms and to impose its own. It needs to be offset by countervailing power. To balance it not only requires an independent and open mind; it also requires *positive discrimination*" (emphasis mine).

It has been my attempt to show that the impasse we have reached is as much a result of our own actions as that of any natural or supernatural phenomena. It was my purpose to show that 'degradation' is a social as well as environmental/ecological matter. My theme has been to emphasize that you have to take the social aspects seriously and that you cannot expect people whose livelihoods have been 'degraded' by various processes to take seriously the idea of 'conservation'. Interest in turtles and their conservation is highly laudable, but efforts to achieve these noble aims should not necessarily be at the expense of some poor fishers, as is happening in Orissa.

If there had been no interference in the coastal areas from the development initiatives—which is impossible anyway—would the coastal poor have been better off? Or, are there alternative ways of meeting the conflicting demands, both ecologically and socially? I do not know. But we do know that they are definitely more vulnerable today than at any time, thanks to all the meddling done in the name of development and industrialization and conservation. This is as good a time for reflection and debate as any—we may still find redemption.

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Coastal Zone Conflicts in Maharashtra

*Ram Bhau Patil **

Abstract

Some ongoing and proposed industrial projects in the State of Maharashtra, India threaten to wrest from fishers their traditional and customary rights of access to natural resources, including fish. Some of these are outlined here.

Keywords

Maharashtra. India. Mumbai. Chemical plants. Power plants. Mangrove forests.

1 Introduction

The State of Maharashtra in India has a coastline of 720 km and about 350 villages are situated along the coast, with a fisher population of about 1 mn that survives by fishing alone. But, in the name of development, all kinds of projects are coming up in the coastal areas of Maharashtra, like power plants—including one by Enron Corporation—amusement parks, a sea-link bridge, an airport, a harbour and a chemical industries zone. These activities are polluting the water, and displacing fisher people almost every 10 km of the coastal belt of Maharashtra.

Examples of the proposed projects include:

- The Esselworld Amusement Park at Gorai in Mumbai: The Essel company has destroyed 700 acres of mangrove fields by spraying chemicals in Gorai village in Mumbai. It is trying to reclaim the mangrove fields in the Coastal Regulation Zone 1, to which fisher people have enjoyed traditional and customary access. The company is not allowing fisher people to fish in this area. The Maharashtra Machhimar Kriti Samiti and the National Fishworkers Forum are agitating against this company through blockades and strike action, and have asked the government to vacate the 700 acres of mangrove fields and to allow fishermen to fish.

- Thermal Power Plant at Dahanu: This project has reclaimed vast wetland of more than 1,000 acres for construction of the plant and dumping of ashes. Around 1,000 fisherfolk, who fish in the wet lands at high and low tides, are affected by this project. Ash dumping is polluting the sea, and several species of fishes have disappeared.
- Worli-Bandra sea-link bridge in Mumbai: For this project, 70 acres of estuary area of the Mithi river at Mahim have been reclaimed. Fishermen of the area who were picking clams, oysters, crabs and creek fish during high and low tides have been displaced, and the coastal ecosystem has been greatly damaged. This is a clear violation of the traditional and customary rights of the fisher people.
- The Tarapur-Mahad-Parashram-Lote chemical industrial zone: This is polluting the river, creek and sea. Drinking water wells are also getting polluted in nearby areas.
- Bombay High oil wells in the deep sea: The digging of wells for oil by the Government of India in the deep seas has encroached on the fishing grounds, and is polluting the sea.
- Industrial fishing vessels in the deep sea, the Enron power project and the mega-airport at Rewas Mandava are other examples of potentially destructive projects.

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- The Nagothana Vadhavan mega-harbour in North Maharashtra, and tourism and aquaculture projects are also affecting the coastal ecosystem, marine environment and fish resources, thus depriving fisher people of their sources of livelihood.

It must be noted that this model of development does not benefit the fishermen in any way, but

creates uncertainties for their survival and livelihood. This is a violation of the Constitution of India, which guarantees the right to life under Articles 18, 19 and 21.

For the protection of the coastal ecosystem, and the management of fish resources, community rights over the water bodies should be entrusted with the local fisherfolk.



Problems of Fishers of Gujarat

*P.V. Khokhari **

Abstract

The Government of Gujarat and the Central government should consider the plight and problems of the fisher people of the State, so that they can catch up with the world's thriving fishing industries.

An early solution to their problems of pollution and transborder fishing will definitely help them carry out fishing operations on the high seas in a safe and profitable manner.

Keywords

Gujarat. National Fishworkers Forum. Transborder fishing. India. Pakistan.

1 Introduction

Of India's 7,100-km long coastline, 1,600 km lies in Gujarat State, which has several small and large ports and fish landing centres. India's population is about five crores (50 mn), of whom 265,000 are fisher people, who constitute an economically backward class, as declared by the Government of Gujarat State. Traditional fishers can be found at Veraval in Junagadh District and Porbandar in Porbandar District. There are at least 90,000 fishermen engaged in the fishing industry of Gujarat State. The Gulf of Kachchh is the primary nursery area for various fish and crabs. This is the best fishing grounds for various species of fish exported for foreign exchange. The fish exported from Saurashtra ports have fetched more than Rs240 crores. The State has 6,787 trawlers, 3,764 gill-nets, 454 fibre reinforced plastic (FRP) boats and 6,451 outboard motors (OBMs), totalling 17,496. The sea off Gujarat is somewhat calm and the fishing season lasts from 16 August to 15 May annually, after which it is closed due to bad weather.

Gujarat's fish production is as under (figures in tonnes):

1996-97	6,60,068
1997-98	7,02,354
1998-99	5,91,960
1999-00	6,70,951

There has been a decrease in the last few years, mainly due to heavy pollution by big industrial houses, whose chemical wastes have damaged territorial coastal areas. In the south Gujarat coastal belt, from Surat to Vapi, there are huge industrial houses whose waste and pollutants have damaged the fishery resources. These industrial plants have no effluent treatment facilities.

For these reasons, the fishermen have had to sail out into the high seas from their native lands. This costs much in terms of higher prices of diesel/fuel and the number of days engaged in fishing. As fish catches decrease, the operations of fishing boats have become uneconomical.

In 1986, the Marine Security Agency of Pakistan captured 11 fishing boats from Gujarat for crossing the invisible maritime border, and sent the fishermen to jail. The fishing boats were kept in custody. Thereafter, the Indian Coastguard took similar action against Pakistani fishing boats. Both Indian and Pakistani fishermen suffer under similar conditions, with a maximum jail duration of three years.

The National Fishworkers Forum (NFF) unit at Porbandar has managed to get the fishermen and their boats released. At times, the boats are not reclaimed as they are in a damaged condition. On 7 June 2001, Pakistani fishermen and their 11 fishing boats were released and repatriated home. Eight

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fishing boats were left behind in damaged condition. In response, 25 fishing boats and 157 Indian fishermen were repatriated from Pakistan to India.

At present, there are 32 Indian fishing boats and 196 fishermen languishing in Pakistani jails. Though trials for repatriation are on, nothing concrete has materialized. Thirty-one Pakistani fishing boats and 200 Pakistani fishermen have been in Indian jails for a long time. It is imperative that the State and Central governments of India provide funds to assist the families of these fishermen. Such systems exist in other countries. Meanwhile, organizations of fisher people in Pakistan and India are helping with the formalities needed to get the fishermen released from custody and repatriated to their homes.

Delegates of fishworker organizations have visited Pakistan for the release and repatriation of fishermen and fishing boats. The delegates to Pakistan were well assisted. The NFF and other organizations have proved especially useful for the fisher people.

When fishing boats are captured by either nation, the fish caught in the boats are also taken into custody, but no price is paid to the owner. This fish

is later sold. But it ought to be done in the presence of the representatives of fishworker organizations, to ensure that there is no malpractice and so that the amount raised can be utilized for the repairs of the boats in custody. This amount could also be spent towards the supervision and maintenance of the fishermen in custody. The charges could be recovered from the boatowner at the time of its release. Charges for repairing engines and other work should also be recovered from the owner. Some funds should be provided to the concerned crew by the government.

By declaring a common fishing zone, the problem of capture and custody of boats and fishermen can be minimized. The boats should not be taken into custody for long periods, but, after the facts have been ascertained, they must be passed back to the nation concerned.

The Government of Gujarat and, if necessary, the Central government, should consider the facts narrated above for the larger interest of the fisher people, so that they can catch up with the world's fishing industries. An early solution to the entire problem will definitely help them carry out fishing operations on the high seas safely.

Coastal Resource Degradation and User-right Abuse in Bangladesh: An Overview of the Challenges in User-based Community Management

*Prosanta K. Roy **

Abstract

This paper deals with the traditional fisher communities of Bangladesh and their rights to the natural resources, including fish, of their own land.

Weak human rights, social injustice, inequity and lack of freedom of expression and rights of association are of major concern in the majority of the world's poor countries. In Bangladesh, the impact of these deprivations is more evident in the everyday life of the coastal indigenous peoples and backward classes. Industrial effluents and urban sewage, along with aquaculture, especially shrimp culture, are the main causes of coastal resource degradation. Industrialists from outside introduced shrimp culture for commercial benefit, without considering the environmental degradation and the rights of the indigenous people. The State does not recognize their rights; it even strictly restricts access to the resources. Private parties and the State own property rights, and class conflicts directly threaten Bangladesh's coastal people and fishers.

The right to access is not sufficient for the sustainable use and development of the resource. Creating awareness about respecting and protecting the environment is an important aim. Equally important is empowerment through training and education about the fundamental right to participate in decisions and activities that directly affect lives and livelihoods. User rights will safeguard users' interests, while respect for the environment is the key for resource protection. To achieve both these goals, assistance should be provided to users under the concept of user-based rights to the community, with a guarantee of employment and minimum requirements leading to sustainable development.

Towards this end, nation-States should undertake immediate and effective measures to stop human oppression and resource degradation, and initiatives to restore the coastal resources involving all sectors like local government bodies, civil societies and, especially, non-governmental organizations (NGOs). In addition, a comprehensive study needs to be done by a body of international experts to formulate an effective model for coastal resource management.

Keywords

Bangladesh. Shrimp aquaculture. Coastal resource degradation. Sustainable development. Coastal resource management.

1 Introduction

In all likelihood, the concept of the 'user' came into practice with the introduction of agrarian civilization about 12,000 to 15,000 years ago. Humans cut jungles, made the rugged lands plain and sowed seeds. They did it to meet their basic need for food.

Thus, they acquired the right of use resource for their livelihood, a primary and fundamental right. The question of 'common' is very much related to the user right because, at that time, people lived in a community and used resources commonly.

The concept of 'property' is based on the right of use and possession. In the old days, this right was

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enjoyed commonly, hence it was a common property right. In the course of time, humans adapted to their diverse livelihoods in different ways and means through natural selection. Thus, tillers settled on agricultural land, hill dwellers on hills and mountains, woodsmen in the jungles, fishers by water bodies, and so on. In this paper, I would like to dwell on the fisher community and their right to the resource in areas where they were born and brought up.

Fishers can be classified into two broad categories, according to the two basic types of fishery resources: fresh-water and marine. They differ greatly in living styles, fishing practices, food habits, resource use, and so on. They experience the same property rights abuse and resource degradation that lead to poverty and environmental damage as the outcome of unplanned overexploitation of fish resources by non-locals and industrialists.

2 Marine Resource Profile of Bangladesh

Bangladesh is a country with a small territory of 14 mn hectares (ha), where the cultivable land area is only 9 mn ha. But it is blessed by 3 mn ha of coastal area, of which 1 mn ha is specially characterized by rich and diverse fauna and flora. The coastal area starts from the Indian border in the west and extends some 480 km up to the Myanmar border in the southeast and the Bay of Bengal in the south. It includes the numerous low-lying islands and vast mangrove swamps (the Sundarbans) in the southern part of the Ganges-Brahmaputra delta, the similar but much smaller estuarine systems along the Chittagong coast (Chokoria Sundarbans and Naaf Estuary), and a single coral island of the extreme southern tip of the country (St. Martin's Island).

The estuaries are also very rich in prawns and shrimps (such as *Parapenaëosis*, *Penaeus* and *Palaeomon* spp.), estuarine crocodiles, 25 species of turtles and tortoises, three species of monitor lizards and numerous snakes. In fact, the coastal resources are rich in a wide diversity of plants and animals, including significant wild life species. The western part of the Sundarbans lies in India and the rest, almost 60 per cent, is in Bangladesh. This region is dominated by two plant species, *Heritiera fomes* and *Excoecaria agallocha*. It is characterized by semidiurnal type of tidal inundation, with a maximum amplitude of 3 m during spring tides. The climate is humid tropical, with an annual rainfall of about 1,600 mm in the central coast and 2,500 mm

in the outer coast. Violent storms are frequent during the pre-monsoon period, and again in September, October and November.

Fishermen commonly catch over 120 species of fishes, including 95 species of water fowl, more than 270 species of local and migratory birds, as well as species of birds of prey in mangrove swamps. About 42 species of mammals are still seen in the Sundarbans, including the rare Royal Bengal Tiger, *Panthera tigris*. A recent study estimates the principal mammalian populations as: 350 tigers; 40,000-70,000 rhesus macaques; 50,000-80,000 spotted deer; 20,000 wild boars; and 20,000 smooth-coated otters. Crustaceans are also important for the biomass of the system. Crabs, prawns and shrimps are the main groups.

About 20 mn people live in the coastal region of Bangladesh, 20 per cent of whom directly depend on the coastal and marine resources for their livelihoods. They live exclusively on fishing of wild fish, along with crabs, prawns and shrimps. In addition, the mangrove ecosystem supports nearly 300,000 coastal people through activities like fishing, collecting honey, wax and timber, hunting, and so on. Fishery production in mangroves increased significantly to 14,000 tonnes in 1982-83, compared to 640 tonnes in 1972-73. Many thousands are engaged in collection of honey and wax. An estimated 232 tonnes of honey and wax were harvested in 1983. In addition, collection of shrimp fry is an important source of livelihood. The mangrove forest also functions as a buffer, protecting the densely settled agricultural areas to the north from the full force of cyclonic storms and tidal waves.

Also of great importance are the marine resources of Bangladesh, geographically provided by a relatively shallow embayment of the northeastern Indian Ocean and the Bay of Bengal in the southern part. The Bay of Bengal occupies an area of 2,173,000 sq km, with an average depth of 2,600 m and a width of 1,600 km. In 1974, the special economic zone provision allowed Bangladesh the right of enjoying up to 200 nautical miles (370 km) from the seashore, which comprises an area of 166,000 sq km, larger than the landmass.

The ecosystem in this region is quite distinct and tropical in nature. The huge river drainage and the profusion of wetlands, marshes and mangroves increase productivity of nearshore fish species. About 475 species of fish are found in this renewable habitat, along with 16 species of marine shrimp. In addition, several species of crab and 31 species of turtle and tortoise, of which 24 live in coastal fresh-water environment, are also found (P.

Gain, 1998). The marine fishery is totally open and contributes to 23 per cent of the total fish catch. The marine fisheries are of two types, namely, industrial (trawling) and artisanal, the former contributing about 6 per cent and the latter, 17 per cent of the total catch.

Petroleum and gas reserves have been discovered in the marine zone. It was recently estimated that about 20 tn cu ft of gases can be extracted from the bottom of the Bay of Bengal. The most recent World Bank estimate shows that Bangladesh is expected to receive US\$1,049 mn by 2004, most of which would go to the oil and gas sectors. The Bay of Bengal is of great significance to Bangladesh and neighbouring countries like Sri Lanka, India and Myanmar for ocean transportation facilities. Carriage of cargo to and from these countries is of immense importance. The oceanic transport route directly supports the principal seaports of Bangladesh, Chittagong and Mongla.

3 Degradation of the Marine Environment

Industrial effluents and urban sewage, along with agrochemicals used in the coastal crop fields, are the main threats to the marine resource. In this respect, the two seaports, Chittagong and Mongla, along with the industrial cities of Khulna and Chittagong, are the main sources of pollution. In Chittagong, out of the 720 industrial units, only 20 per cent treat their liquid effluents before disposal. These effluents contain hazardous chemicals like chromium, salt, sulphur, caustic soda and butanol, which are finally carried to the Bay of Bengal through the river Karnafuli.

Khulna possesses 300 large industrial units, which discharge about 10 mn gallons of liquid waste that finally reach the Bay of Bengal through the Sundarbans. Oil spills on the seaports and ships navigating the area are the other sources of pollution. Shipbreaking on the beach add to the pollutants, which seriously affect the aquatic fauna and the mangrove vegetations. Uncontrolled, illegal fishing and overfishing of marine fishes and aquatic turtles, molluscs and crustaceans threaten marine fish resources. Excess navigation also disturbs the natural habitat of the aquatic flora and fauna.

The Sundarbans have been exploited from time immemorial, when human settlements in the basin started cutting and clearing the vegetation for homesteads and cultivation. About 100 years

ago, the area came under the maintenance of the government's department of forest. Agricultural encroachment—a common and indigenous phenomenon to this important ecosystem—threatens its existence. Population explosion and dense settlements on the coast surrounding the Sundarbans could reach a disastrous position, unless checked. Fishermen's camps, which encourage illegal trapping and hunting, are also a cause of serious disturbance. This illegal activity is also done by the woodcutters and a reasonable number of civil and defence officers. Along with agricultural encroachment, shrimp farms and their intensive cultivation have added serious damage to the mangrove forests, affecting the fries of all wild fish.

The ecological disturbances of mangrove forests have been caused by many anthropogenic activities, like the diversion of the Ganges river. About 40 per cent of the dry season flow of the Ganges has been diverted upstream, following the Farrakka Barrage in India in 1974. This accelerates the decrease of fresh-water flushing and increases saline water intrusion, which damages the vegetation and finally degrades the environment. Oil spills cause immense damage, especially to the aquatic fauna and sea birds. The seaport Mongla is the main source of oil spills, with pollution also coming from the large and numerous shipping vessels that pass through the Sundarbans every day via the north-east shipping route.

The most significant and immediate threat is the illegal overextraction of timber and fauna. In the 1980s, an assessment showed that the stock of *Heritiera fomes*, the principal variety of mangrove locally known as 'Sundari', has declined by 40 per cent since the forest inventory of 1959. At the same time, another dominant species, *Excoecaria agallocha*, has fallen by 45 per cent. For any Bangladeshi, it would be shocking to know that, in the near future, the Sundarbans will be a misnomer due to the possible extinction of Sundari if the trend of exploitation, rather than conservation and management, continues.

4 Commercial Shrimp Culture

Intensive commercial shrimp culture is one of the most important export-earning activities of Bangladesh. Initially, during the period 1979-80, the area under shrimp culture was only about 20,000 ha. It has now reached 137,995 ha (BBS, 1998) and contributions of this subsector, which

provides employment for around 1 mn people¹, are estimated at US\$9-180 mn. Though the employment and export earnings are impressive, to achieve them, Bangladesh has to pay considerable costs relating to environmental degradation, including deterioration in soil quality, declining cereal and vegetable production, as well as many social conflicts. The yield of rice and other cereals has declined, as has land quality and acceptable levels of salinity and acidity. As a result, the marginal farmers are forced into poverty and landlessness.

Environmental degradation due to retention of saline water leads to a loss of biodiversity (that is, the disappearance or extinction of indigenous flora and fauna), declining land quality, loss of genetic diversity due to monoculture, and so on. The coastal mangrove forests are now threatened by the expansion of shrimp farms. It is reported that a total of 60,000 ha of mangrove forest area has been converted mainly to shrimp farms, of which 2,944 ha have gone to the Directorate of Fisheries for shrimp aquaculture in a project funded by the Asian Development Bank (ADB) (Md. Kamal, 1999). Mangrove forests are also considered suitable breeding grounds for many fresh-water and marine fish, including shellfish and other wild species. The removal or destruction of mangroves may disrupt the entire coastal environment in many ways. Extensive clearance of mangroves has led to great erosion and siltation in certain areas, which has affected coastal areas like seagrass beds and habitats of migrating birds, sea turtles, dolphin, molluscs and crustaceans.

In the polder areas, the long retention of saline water damages the natural vegetation, aquatic plants and weeds, leading to their extinction. The most important and common ones affected are the Pati, Bajua, Shapla, Helenchi, Malencha, Kalmi, Durba, Thankuni and Ambali. A wide variety of fruit and woody trees, like mango, blackberry, jackfruit, lemon, papaya, banana, coconut, beetel nut, guava and babla are declining at an alarming rate. The production of all kinds of household vegetables has been stopped due to soil salinity and water retention in homestead lands and vegetable fields. The flooding of land also reduces the availability of grazing fields, accommodation and drinking water, which inevitably leads to reduced livestock and poultry populations.

The loss of biodiversity due to shrimp culture is of paramount concern. Wild fry, collected from the

river by thick nets, is the largest source of shrimp fry for commercial farming. Normally, the collected wild fries, including all other fish fry, are kept in a jar/pot, and only the shrimp fries are sorted out, while the rest are all abandoned. Thus, we are losing thousands/millions of wild fries of thousands of species of aquatic flora and fauna just for one or two shrimp fries. On the other hand, in the shrimp farm areas, selective species of bagda and galda are cultured intensively and all other natural aquatic species have declined or become extinct. During the visit of the author to the farm area of Khulna and Bagerhat, the farmers reported this scarcity and decline of so many indigenous aquatic fishes, turtles, molluscs, etc.

5 Deprivation of Rights Relating to Environment and Resource Use

Bangladesh is a poor and underdeveloped country, where all the indicators of human development are weak. More than 40 per cent of the people are illiterate and over 60 per cent live below the poverty line (daily consumption below 2,200 k cal). The infant mortality rate is 57 per 1,000 live births, and 0.3 mn are born without medical care per year, 10 mn suffer from malnutrition, and nearly 0.2 mn children die before attaining 5 years of age. In view of these human deprivations, protective security and access to the resources are of highest concern. The latter should be considered as a right and not a privilege and must be ensured through democratic processes of the nation-State.

6 Deprivation by Law and Practice

Bangladesh is a post-colonial State. Though it achieved freedom in 1971, all current parameters indicate a transitional stage from colonial practice to freedom, with most of the policies and biases of the former ruler still being followed, especially in laws related to resource use right and management.

It is worth mentioning that land, along with all other resources in this country, were settled to private ownership by the *zamindars* during the British regime under the Sunset Law, Permanent Settlement Regulation (PSR) 1793. The trend was to settle almost everything possible to ensure a fixed economic return or revenue for the rulers. The termination of British regime in 1947 gave birth to two

¹The employment scenario is estimated ignoring the extent and magnitude of eviction and deprivation of the local poor from their user/property right. The poor and helpless people are forced to engage in shrimp farms as day labour for subsistence, including collection of fry. In fact, both the works are done against their interests, financial and environmental.

separate States: India and Pakistan.² East Bengal became the eastern province of Pakistan. Due to the PSR in 1947, the land tenure situation in this part reached such a position that 91 per cent land was under permanent settlement, 3.5 per cent under temporary settlement and only 5.5 per cent under 'public property' status; and all the tenancies created by the *zamindars* were legally valid tenures by the Bengal Tenancy Act 1885. The *zamindari* system was abolished under the State Acquisition and Tenancy (SAT) Act 1950 and all rent-receiving interests were vested to the State, which made the lawful settlers by the *zamindars* owners of the property. However, the SAT Act 1950 (Section 20) restricted private ownership over certain categories of property as absolutely 'non-retainable', including forests and water bodies³ (except tanks constructed solely by excavation). Today, the water bodies and forest resources are public property (State-owned) and maintained by the government. Forests are managed by the Department of Forests under the provision of the Forest Act 1927. The land ministry regulates the management of land tenure and revenue system under the Land Management Manual (LMM) 1991. The tenurial provisions for water body management under the LMM of 1991 are as follows:

- The closed water bodies measuring up to 20 acres are entrusted with the *upazila* (sub-district) administration for management and open auction.
- The water bodies managed by the Ministry of Fishery and Livestock would be available and accessible to the scientists and researchers of the Department of Fisheries for investigation and environmental information collection.
- The closed water bodies, mainly ponds not more than 3 acres in size, would be preserved by the union council so that people can exercise their customary right of using the waters for domestic and other uses. These fisheries would not be leased to anyone.
- All other closed and open-water bodies covering an area larger than 20 acres would be leased through open auction to the people by the Deputy Commissioners concerned.

This generalized tenure and resource use practices are also applicable to the coastal resources. Ex-

cept for the rivers and mangrove swamps, 2 mn ha of coastal lands are cultivable and under private ownership, while the remaining 1 m ha is, more or less, State-owned. Eighty per cent of the population are farmers and live on rice cultivated in their fields. Due to salinity, the crop production is very low and the mangrove ecosystem provides livelihood through fishing, collecting honey, wax and timber, hunting and so on. About 20 per cent of the coastal people live exclusively on fishing of wild fish along with crabs, prawns and shrimps. Mangrove forests and all open-water bodies are controlled by the government. All types of harvesting of mangrove forests are regulated by the Forest Department. Open-water bodies are also leased to the individuals for a period of two to five years. In this way, the local indigenous people are being deprived of their right of harvesting and fishing because they are poor and unable to lease the water bodies, though the government has declared that the water bodies will be leased only to the fishermen, not to others. The recent mission of intensive and commercial shrimp culture by non-fishermen has deprived the poor and marginal farmers. In many cases, these poor people are evicted by the non-local farm owners, which adds to their sufferings.

Forests, including public land resources, are strictly restricted and come under the system of public-individual property rights through leasing, either permanently or temporarily, to an individual or a corporation. In the case of water bodies, the government practices public-group property rights, with a legal arrangement where the government conditionally leases the water bodies to the fishermen's society or user groups of a particular locality. In both systems, the practices are now jeopardized by mismanagement and inefficiency of the public sector, along with the social weakness and lack of political commitment.

Two major types of property rights—the private and State owned/public—are supposed to be practised in the coastal area of Bangladesh, but the most important common and open-access property rights are no more recognized in tenure form. This tenured system is a great threat to community-based property rights, including the commons, particularly for the local and indigenous people of Bangladesh.

²In British India, this territory of Bangladesh was under the province Bengal (Bengal, Bihar and Orissa). As Viceroy, Lord Curzon, in 1903, decided to divide the original Bengal, and, in 1905, a new province was created comprising East Bengal and Assam. Later on, in 1947, during the partition of India and Pakistan, East Bengal was included to Pakistan and renamed as East Pakistan. After 24 years, the people of East Pakistan achieved victory on December 16, 1971 through a liberation war.

³"Land" includes land which goes under inundation daily or seasonally (SAT Act 1950).

7 Deprivation by the Power Structure

In the economic contribution to the national account through export earnings, shrimp culture plays an important role, including in employment. But all these achievements have various costs to society; marginal farmers and local fishers are specially subjected to exploitation. Many conflicts and litigations have also arisen between farm owners and small landowners, and between marginal farmers and fishers, which affect social life in various unpleasant ways; to some extent, eviction from property has also happened.

The shrimp farms are either privately or publicly owned; in most cases, land belongs to the marginal farmers, from whom the farm owners have to procure or lease land. The owners of the large shrimp farms seized the properties of all other small/marginal farmers in collaboration with local touts. To some extent, the helpless farmers were forced to sign the deed of lease; otherwise, they would have been evicted and driven away. In extreme cases, they have been tortured by paid musclemen. It was reported that in places like Paikghacha (in district Khulna), the farm owner did not hesitate to shoot down women in broad daylight. The story does not end here. When the fight ultimately settles, the farmers are often deprived of their lease money.

In many places like Paikgacha of Khulna district, shrimp farm owners procure land on lease for two to seven years from many farmers to make a large commercial farm unit. The farm owners usually pay US\$35-50 per acre seasonally to the farmer and, as annual rental, double this cost or US\$70-100. The per acre cost in semi-intensive shrimp farming, on average, is US\$1,300 and the net return is US\$4,600. From this, it is not difficult to estimate the degree of exploitation by the farm owners. Farm owners, on average, get more than US\$3,300 from one acre of land, while the real owner of the land, the farmer, gets only US\$35-100. On the other hand, due to increasing salinity, the production of cereal and other household needs, including livestock, has declined remarkably, pushing the farmers to the verge of destruction. The uncontrolled deterioration in household incomes burdens the land users with debt, forces them to migrate to non-farm activities or leaves them stranded as submarginal patch farmers, which, in turn, may lead to increased rate of landlessness and poverty.

The farm owners and lease holders strictly restrict access to the fishing ground, both in open

water and shrimp culture areas, leaving the fishers and their children to starve for days on end. To survive, they have to compromise and come into unofficial contact with the farm owner for work. The episode of sufferings does not end here, as the farm owner seizes subsistence rights by putting an embargo on collecting crabs and small crustaceans to eat⁴. Thus, both property rights and human rights are seriously threatened in this coastal area of Bangladesh. As a result, poverty, and in extreme cases, migrations of fishers and poor farmers from their properties and homesteads are the hidden scenes in the export drama.

8 A Bangladeshi Perspective

User rights and community property rights, including human rights, are the major areas for violations in the coastal parts of Bangladesh. The right to access to the resources is also strictly restricted by the State. For example, the reserved and protected forests are controlled by the Department of Forest, and other public properties are under the jurisdiction of district administration (the colonial law enforcing institution). The marine and coastal resources are now under threat of degradation due to irregular anthropogenic activities. Under private ownership, a bundle of titles is protected by the legal system. Sustainable resource management thus requires a fundamental and conceptual change in juridical perception and interpretation of titles, rights, duties, interests and liabilities.

It is noteworthy that there are no specific laws for marine resource management. Most of the related laws are either for management in terms of rent/revenue receipt and environmental conservation based on a legal framework. If we consider the Environmental Conservation Act 1995, the legislation purely deals with the environment; it does not, however, explicitly recognize the right to a sound environment. Like this Act, all other rules and regulations are devoid of the rights and titles of the community, ignoring their vital part in the particular environment.

9 A World Perspective

Bangladesh's experience on rights and management of coastal resources can be considered a common and generalized phenomenon in the countries

⁴During a visit, the author witnessed extreme abuse of human rights.

of the Indian Ocean Region. From a more generalized point of view, we can identify the following common factors:

- The majority of the people of the world live in developing countries.
- Human rights are weak in these countries.
- Access to justice and information, and freedom of association and expression, are of highest concern, alongside property rights.
- Private/individual activities are accelerating human-rights violations and environmental degradation.
- In the name of development, human-rights and environmental abuses occur.
- National/State law does not recognize the human rights of the local communities and indigenous people, including their rights to land and other resources.
- It is now more apparent that deprivation of the local/indigenous people has a very close linkage with environmental resources and human rights abuses.

Key Challenges From the above picture of weak human rights and abuse of property and environmental rights in the coastal regions of the developing world, we can consider the following as a few key challenges:

- prevention of human rights abuse/violation;
- establishment of community participation and user-based property rights;
- avoidance of environmental degradation; and
- legitimacy of user rights and enforcement, that is, compilation and enforcement of laws in support of user-based property rights and environmental management by the nation-State.

10 Overcoming the Challenges

We believe that humans have a right to user-based property and environmental management and are committed to overcome these challenges. We need a creative approach and new opportunities to respond to the challenges, inviting contributions pertaining to community and user-based legal incentives for sustainable development.

⁵This Filipino experience is adopted from *Managing Small-scale Fisheries: Alternative Directions and Methods* by F. Berkes et al, 2001.

From environmental and human rights perspectives, it is challenging to develop equitable legal relationships between local communities, government and other supportive organizations for sustainable user-based community management of resources.

Before modelling such an effective and creative approach, we should share the experiences gained by fisher communities in community-based use and participation in resource management system.

11 Experience of Community-based Co-management in the Philippines

Fisheries are now passing through a process of transition to the sustainable use of resources through environmental conservation practices. This is done by community-based participation at the level of users, that is, fishers.

Like many other fisher communities of different countries, the fishers of the island of San Salvador in the Philippines⁵ took the initiative to avert the overexploitation of fishery resources in the late 1980s and, by 1997, they had attained a tangible success in community-based resource use and co-management.

Most of the honorable participants at this conference may be well experienced in this field. Nevertheless, I feel it necessary to describe the key initiatives and processes taken by the fisher community of San Salvador.

12 Invasion of Non-locals and the Beginning of Degradation

The fishery of San Salvador was an open-access resource, without any law enforcing arrangement since the time of human settlement. Until the late 1960s, resource use conflicts were rare and the resource remained in good condition.

But, in the early 1970s, non-local fishers from the central Philippines entered the area and brought with them illegal fishing methods such as cyanides, fine-mesh nets and explosives. The new fishers also integrated the village economy into the international market for aquarium fish.

13 Crisis Point

In the late 1980s, the resource degradation and use conflict reached a crisis point. The average catch per trip of 20 kg in the 1960s had declined to 3 kg in 1988. Many reef fish, such as groupers, snappers, and damsel fish, became scarce. In 1988, the living coral cover had declined to an average of 23 per cent for the entire island.

14 External Agents and the Initiatives of Local Fishers

As the local fishers of San Salvador felt the need of resource protection for their livelihood, they went in search of solutions to their problems. Peace Corps volunteers had arrived in San Salvador in 1987. They conceptualized a community-based coastal resource management project for coral reef rehabilitation. In 1989, a local NGO led a project to establish a marine sanctuary. The project featured biological conservation and governance interventions with other programmes like management planning, community organizing, income generation, rules and regulations, education and training.

15 Sharing of Experience

In the same year, 1989, the core group members visited a successful marine sanctuary in the central Philippines. That visit increased motivation and support for the idea of sanctuary and reserve, which resulted in the drafting of a local ordinance to ban fishing within the sanctuary and allow only non-destructive fishing in the reserve.

16 Participation of the Local Government Authority

Depending on the draft local ordinance, the local government authority, the Masinloc Municipal Council, helped by passing an ordinance for the marine sanctuary and reserve. The ordinance also increased the role and participation of the government authority and brought about a resource management partnership between government and fisheries in a number of ways:

- the legislation provided a legal basis for the sanctuary and for apprehending rule violators;
- conflicts were mediated between local and outside resource users;

- boats and equipment for patrolling coastal waters were provided;
- a government patrol team to enforce laws was created; and
- a political environment that allowed for the pursuit of community-based initiatives was provided.

This inspired the core members to monitor illegal fishing activities and guard the sanctuary. As a result, other resource users participated in village consultations, endorsed local ordinances, adhered to the rules, and adopted non-destructive fishing methods.

17 Obstacles

The path of co-management was not trouble-free. The fishers had to fight against the non-locals as well as local exploiters. Those fishers who were displaced from the sanctuary and reserve by destructive and illegal methods of fishing became alienated and resentful. Over time, however, tangible benefits in the form of higher fish catch from San Salvador's fishing grounds helped to encourage rule compliance and non-destructive fishing practices.

18 Outcome of the Co-management System

Within a period of only 10 years, fish catches went up from 3 kg in 1988 to 6-10 kg in 1998. The extent of living coral reef cover increased from 23 per cent to 57 per cent for the whole island. Another biological achievement was the increase in fish diversity. Fishers perceived gains in equity, knowledge, household income, empowerment and conflict reduction. Overall, the system of co-management gave the villagers a reason for optimism, a motivation for collective action, and pride in their resource management achievements.

19 Contributing Factors

Several factors led to the success of the co-management or community-based management system. The important ones are:

- participation of resource stakeholders, inculcating a sense of ownership in planning and implementation of programmes;

- partnership agreement between fishers and the government to promote community management;
- specification and legitimacy of user rights and enforcement;
- empowerment and capability building;
- tangible benefits such as redefined resource access;
- shift to non-destructive fishing methods and improved enforcement; and
- observable changes in biological, social and economic development.

20 Conceptual Clarification for a Model Approach

Though the model of community-based management relating to co-management involving the government, community and NGOs, as practised in San Salvador, is a good one, it is not sufficient to explain the basic points of user-based community rights and environmental rights and management. But first, we need to clarify some basic concepts.

20.1 *User-based community*

'Community' is a term with a wide diversity of usage, denoting:

- the people living in one place, area or country, as a whole;
- a group of people of the same religion, race or occupation or with shared interests;
- a group of people sharing things in common or being alike in some way;
- a group of people with a community spirit, a feeling of sharing the same attitude, interests, and so on;
- a group of animals or plants living or growing⁶ in the same place.

From the above terminologies, it is clear that the constitution of a community requires five fundamental components: a certain area, a group of living mass, a common mode of living and growing,

⁶For those who are born and brought up in a certain place, depending on the resources available there, this can be considered a birth right through user-based acquired right, irrespective of diversities in colour, caste and nationality.

⁷Those who shifted to other livelihood but get the benefit of use of resources through paid labor or any other secondary support.

sharing of resources, and the feeling of sharing the same attitude and interests. The last one is exclusively applicable for rational beings.

In our present discussion, we must choose the words that are more useful to understand the theme and ethics of the user-based community approach. We may thus define these components as follows.

- 'Certain area': the area where the resources are present, that is, the resource-based area.
- 'A group of living mass': this is an ecological term that includes animals and plants as living mass, but, in our present discussion, only human populations should be considered as those living in that resource-based area.
- 'Common mode of living and growing': the people should have a common life pattern and livelihood or occupational entity.
- 'Sharing same resources': the people must depend on the same resource and everybody has access to enjoy the resource.
- 'Feeling of sharing the same attitude and interests': the people must have a feeling of sharing ways of thinking, doing, managing and protecting, and making others do common things.

Thus, the user-based community is a group of people who live in certain resource area and directly depend on that resource with a common mode of living and growing (same occupation), having a feeling of sharing the same attitude, interests, and so on.

20.2 *User-based right*

This right is of highest consideration in resource use and management. I stated earlier that user-based right should be established on a first-user basis. This needs further clarification. It may so happen that one who was a resource user in the past, like a fisher or tiller, may have shifted, in the course of time, to being a businessman in an urban setting; at the same time, an urban day labourer may have become a resource user, settled in that resource area. Ethically, the first one should lose his right to the resource and the latter should be provided an acquired user right. User rights can thus

be further refined into direct user rights and indirect user⁷ rights.

20.3 *Nature and type of property rights*

The concept of private property is harmful to society. Polarization of money and assets is the principal outcome of private ownership, and the root of inequity, creating scope for inefficient, uncontrolled and insufficient use of resources. Private ownership is quite inapplicable in natural resource use and management.

Apart from private property rights, two other types of property rights are practised in society: the common and the public or State. In certain cases, where no well-defined property rights exist, the situation is very often taken as open access. Though 'open access' and 'common' seem to be synonymous, they differ greatly. Common property rights are the rights of members of a certain community to enjoy any property or resource commonly, which may be regulated by law, either local or national. Open-access rights are also common but are not restricted to the local community, that is, all the people of a State may enjoy the resource without any legal framework in use.

Public properties are of a different resource base, where the title is exclusively vested to the State but the right of use is diverse in relation to the nature of the property. In some cases, the State uses the property for national interest under direct control as reserve forests, national parks and so on, but, in most cases, public properties are used by the people under a different legal framework with a view to rent collection, as in lease (short-term and long-term) to either individuals or groups. In most cases, the State encourages the concept of private and individual rights even in resource use. In certain areas, the State has still not established public control over the resources and there, users common rights exist. In many countries, the nation-State recognizes community participation and rights to resource use and management within a community through a system of co-operatives.

No property right should be recognized in respect of title except by the State; people should possess only user rights, which can be ascertained by how property is used⁸ by the community of that resource area. The vital point is the right of use to the resource, not the title, and the user right should be ascertained on the user-based community con-

cept. The title creates hereditary rights, which provide private ownership to the descendants. So, the changed property right should be established on the philosophy of 'user-based community property right'.

20.4 *Environmental abuse and human rights*

Degradation of resources and environmental damage occur due to unplanned and uncontrolled anthropogenic activities. Such environmental abuse is relatively higher where human rights are weak, or, in other words, the degree of environmental abuse is proportionate to human rights violation. In the name of development and poverty eradication, several projects are adopted in developing countries, like coastal flood protection embankment schemes and export-oriented intensive aquaculture, which lead to further exploitation of resources and marginalization of the indigenous and poor people.

Where the State does not recognize their rights, local communities and indigenous peoples suffer from human rights violations, including environmental abuse. This is also true for other resource users, like tillers of land. Thus, the right of a particular community to access and live in certain environments, that is, the environmental right, is very difficult to differentiate from human rights. The right to environment does not include merely the right to live and enjoy the resources but also the right to conserve them through proper use and management. So the user right approach is appropriate where the user can apply his/her environmental right not only to use but to conserve and protect the environment from damage and injustice.

20.5 *Man as a part of the environment*

The two basic components of the environment are the biotic communities (living biomass) and the abiotic resources (non-living physical bodies). The interactions of these living and non-living components in certain resource areas (habitat) constitutes an ecological unit, the ecosystem, which is the basic contribution of the natural world, leading to environmental balance. Ecologically, 'community'⁹ includes all living bodies, that is, plants and animals living in a certain habitat, and the integrated unit of interaction includes all the species of living bodies.

⁸Tilling in land, fishing in water, etc. are modes of living and livelihood relating to resource.

⁹Someone may think of ecosystem-community to explain the human community of a certain area in respect of community-based rights; in such a case, resource management is not suitable enough and inappropriate.

The nature of the resource and the climatic conditions of certain habitats play a vital role in selection of species of plants and animals, and this process of selection, or 'natural selection', is very long and complex. Like many other living species, humans struggled for existence against abiotic and biotic environmental factors and acquired victory in the competition of the 'survival of the fittest'. But humans have become a threat to the environment by enjoying resources in an uncontrolled way, which is against the natural law of environmental balance. They have forgotten that they are also a part of the natural system, under an ecosystem whose resources form the base of all living and non-living conditions, and that if they fail to restore or maintain the rhythm, the whole world is doomed¹⁰. Humans are the only living creatures that engage in damaging the resources beyond the regeneration capacity of the natural system.

If we consider the above facts, the responsibility to restore resources does not lie exclusively with the people who live in the resource area, but to the nation States, civil societies, NGOs and all sectors of people. By way of restoration, we have to consider the vital role of the local and indigenous people, as they are the inhabitants of that particular habitat, like all other species of living bodies, and it is their environmental right to live and enjoy the resource. Ignoring this right, we seized their resource for our class benefit and caused great damage to the environment. This is the proper time to reinstate their rights and avert environmental degradation through recognition of user rights to resources.

Some may argue that indigenous people are not aware of the environment and they do not know how to use resources in a sustainable way. This political economy of ignorance makes it easy to overlook the presence of rural people and their rights. Though all the local and indigenous people do not equally respect and protect their resources, many of them know much more about the resource and its management than modern scientists. In addition, we have to consider that, as human beings and inhabitants born in that area, they should have a fundamental right to participate in decisions and activities that directly affect their lives and livelihoods.

21 The Approach and the Model

To achieve the goal of sustainable development, we must consider the user right of the resource-based community, along with the use of resources in a

sustainable way, where ecological balance should not be hampered, so as to allow the regeneration capacity of nature to work. The major considerations of the concept can be interlinked and designed as follows:

Right and Title → *Mode of Use* →
Livelihood → *Living* → *Development*

where,
type of property right = user-based right of the community, that is, the right of access to the resource;
mode of use = sustainable use of resource without compromising the future;
significance of livelihood = employment of human resources by occupation;
living = survive with a guarantee of minimum requirements and equity; and
significance of development = sustainable development.

22 Probable Outcome

Whatever the strategies and ways applied to implement the model, the probable outcomes are:

- protection of resources from indiscriminate and irregular use;
- creation of common-right ethics;
- reduction of private ownership and minimization of conflicts at the individual level;
- human resource utilization through employment;
- maximum use of resources, without compromising the future;
- individual and social security through community-based life;
- guarantee of minimum requirements, like food, clothing, shelter, and so on; and
- reduction of inequity.

¹⁰Greenhouse effect, acid rain, toxic wastes dumping, etc. can be taken into consideration.

23 Conclusion

Indiscriminate use, misuse and exploitation without replenishment of resources, along with irregular and unplanned activities against nature, leading to environmental degradation and a disastrous end is a reality today. Humans are their own enemy, harming themselves, though they are the only rational beings who can restore the resources. Along with many other devices for restoration and avoidance of degradation of resources, the user-based community right is an important and effective one in most of the fragile ecosystems. This is the proper time to take effective steps. In particular, the nation-States may take:

- immediate and effective measures to stop human oppression and resource degradation; and
- initiatives to restore the coastal resources involving all sectors—local government bodies, civil society, NGOs—by applying the concept of user-based property rights and management.

Finally, we, of the Indian Ocean Region, may take the initiative to form a team of experts to conduct a comprehensive study to finally shape a model and a programme of action.

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The EU as a Distant-water Fishing Power

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Abstract

This paper examines management objectives and the precautionary approach in international fisheries management, and the relationship between developed and developing States. Three different tuna regional fisheries organizations illustrate the differences—the International Commission for the Conservation of Atlantic Tunas (ICCAT), established in 1969; the Indian Ocean Tuna Commission (IOTC), which entered into force in 1996; and the new, as yet unnamed, commission for tuna in the western and central Pacific.

Keywords

Fisheries management. Precautionary approach. Tuna. Regional fisheries organizations. ICCAT. IOTC. Western and Central Pacific. WIOFA. Flags of convenience.

1 Introduction

The Indian Ocean is an increasingly important fishing ground for tuna and billfish, with declared catches having grown almost every year since the mid-1970s. While well over half of the world's tuna and billfish are caught in the Pacific (3.9 mn tonnes in 1999, or 66 per cent of the total), catches in the Indian Ocean surpassed those in the Atlantic in 1986. By 1999, a total of 1.3 mn tonnes of tuna and billfish were caught in the Indian Ocean.

These fish are caught by an extremely heterogeneous collection of fisheries. The small-scale and artisanal sectors of the coastal States are relatively more important here than in other ocean areas. This is evident in several ways.

The coastal States catch more than do the distant-water fleets (DWF). In 1999, 28 coastal States reported total catches of 850,000 tonnes¹, whereas the DWF reported 563,000 tonnes.

Of the five largest fisheries in the area, three are by coastal States and two are DWF:

- Spanish purse-seine (142,000 tonnes in 1999 of skipjack, yellowfin)

- Sri Lankan gill-net (122,000 tonnes of skipjack, yellowfin, shark)
- Maldives baitboat (116,000 tonnes of skipjack, some yellowfin)
- Taiwanese longline (100,000 tonnes of bigeye, albacore, yellowfin)
- Iranian gill-net (82,000 tonnes of yellowfin, longtail tuna, skipjack)

The country with the largest total catches is a DWF—Spain—but six of the top 10 are coastal States (No. 2—Sri Lanka, 3—Indonesia; 4—Maldives; 5—Other nei²; 6—Taiwan; 7—India; 8—Iran; 9—France; 10—Pakistan).

Purse-seines are the most important gear type, accounting for 449,000 tonnes in 1999, equivalent to 31 per cent of declared catches. Gill-nets (coastal, not high-seas drift-nets) followed and caught 353,000 tonnes, or 25 per cent of the total.

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¹All figures include catches of sharks (68,000 tonnes); data from the IOTC database in FishStat, available on the IOTC website <http://www.seychelles.net/iotc/English/TechInfo/Edatabases.htm>

²Other nei is 'not elsewhere included' and consists primarily of estimated catches by vessels flying flags of convenience.

2 The Legal Instruments for Tuna Fishing in the Indian Ocean

It is no exaggeration to say that international fisheries management can be divided into two periods—prior to the UN Convention on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (Straddling Stocks convention) and after³. That convention made tremendous advances in defining the objectives, responsibilities and methodologies of regional fisheries organizations (RFOs). It incorporates provisions on flag and port State responsibilities, special rights for developing States, a dispute settlement mechanism and many others. As of 3 October 2001, 29 countries have ratified, including several of the Indian Ocean coastal countries⁴, with 30 necessary for entry into force. The European Union (EU) has not completed ratification procedures.

As the Indian Ocean Tuna Commission (IOTC) was negotiated in the early 1990s (it was adopted by the FAO Council in November 1993), it is the last of the pre-Straddling Stocks conventions. Nonetheless, several of the provisions of the Straddling Stocks convention were foreshadowed in IOTC. Here I will look at two aspects: management objectives and the precautionary approach, and the relationship between developed and developing States. Three different tuna RFOs will illustrate the differences—the International Commission for the Conservation of Atlantic Tunas (ICCAT), established in 1969; the IOTC, which entered into force in 1996; and the new, as yet unnamed, commission for tuna in the western and central Pacific (which I shall refer to as the Western Central Pacific Tuna Commission, or WCPTC). At the time of writing (October 2001), three countries have ratified the latter, out of a necessary ten.

3 Management Objectives and the Precautionary Approach

ICCAT has no clearly stated objectives as such. Instead, in its Preamble, it aims “to co-operate in maintaining the populations of these [tunas and tuna-like fishes] at levels which will permit the maximum sustainable catch for food and other purposes”.

Maximum sustainable yield (MSY) is the classic management objective, also found in Article 61 of the UN Convention on the Law of the Sea (UNCLOS), which has been largely discredited in recent years as being too prone to overexploitation. The word “precaution” does not appear anywhere in the text of the Convention.

Precisely because MSY has led to so many depleted stocks around the world, the language found in the Straddling Stocks Convention (and the FAO Code of Conduct for Responsible Fisheries) is more conservation-oriented. For instance, in Article 5 on General Principles, the UN Agreement refers to “measures to ensure long-term sustainability of straddling fish stocks and highly migratory fish stocks and promote the objective of their optimum utilization”. MSY is cited as a minimum standard which is heavily qualified “by relevant environmental and economic factors, including the special requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global”.

The precautionary approach, listed as one of the General Principles in Article 5, is fully described in Article 6. Annex II provides detailed guidelines for the application of the precautionary approach to highly migratory species such as tunas.

IOTC contains some, but not all, of the progressive aspects of the Straddling Stocks convention. Its objective, in Article 5, is “the conservation and optimum utilization of stocks covered by this Agreement and encouraging sustainable development of fisheries based on such stocks”. Fortunately, the term “maximum sustainable yield” does not appear in the Convention. However, neither does the word “precaution”.

WCPTC outlines its conservation and management principles in Article 5. They are virtually identical to the wording of the Straddling Stocks convention, including the reference to the precautionary approach and the description of its application.

There is thus a clear evolution from a simple acceptance of MSY as the only objective of management to a far more conservative set of objectives, which may include MSY as a minimum standard but as definitely subordinate to a well-defined precautionary approach.

³Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.

⁴Australia, Iran, Maldives, Mauritius, Seychelles, Sri Lanka

So much for theory. But what has happened in practice? Most of the tuna and billfish stocks under ICCAT jurisdiction are in a sorry state. Of the major stocks, only yellowfin and skipjack are not considered to be overexploited. From the point of view of conservation of stocks, ICCAT cannot be considered very successful, though it has made attempts, in recent years, to limit fishing capacity in some fisheries.

The situation is somewhat better in the Indian Ocean, but industrial tuna fishing does not have as long a history there. No species are reported as being overexploited, though analyses of bigeye and several billfish stocks have led scientists to urge caution in these fisheries. As the WCPTC has not yet entered into force, it is not possible to evaluate its success at achieving its objectives.

4 Developing and Developed States

In many RFOs, there is an obvious tension between the more affluent States, with their highly developed fishing fleets, and the less affluent, developing States, which are often still trying to establish or expand their fishing activities. Other differences occur between coastal States and the DWF States. In the IOTC, these alliances are drawn along similar lines, though this is by no means always the case.

In ICCAT, there are no occurrences of the words “coastal”, “developing” or “developed”. In those days, the question apparently did not arise! It has since, of course, become a major source of disagreement. As Atlantic tuna stocks decline, and developing and/or coastal States seek to develop their fisheries, a major battle has broken out over allocation of access to the more lucrative stocks, especially swordfish, bluefin and bigeye⁵.

The Preamble of IOTC recognizes the “special interests of developing countries in the Indian Ocean Region to benefit equitably from the fishery resources.” One of the Objectives is the “transfer of technology, training and enhancement, having due regard to the need to ensure the equitable participation of Members of the Commission in the fisheries and the special interests and needs of Members in the region that are developing countries.”

There are no catch limits adopted by IOTC, so there has been no need to discuss allocation among the countries involved. In other respects, the organization seems to be trying to put these words into practice. For instance, a resolution was adopted

in 1999 to limit the fishing capacity of the fleets exploiting tropical tunas (yellowfin, skipjack and bigeye)—the resolution specifically mentions the “rights and obligations of developing countries ... with respect to their entry into high-seas fisheries”. In March 2001, a special session was held to discuss a possible integrated control and inspection scheme in the IOTC area. Again, mention was made of the needs of developing nations with respect to training, technical assistance in establishing Vessel Monitoring Systems (VMS) systems. Neither of these initiatives is operational yet, so it is not clear how, or if, these promises will be kept.

Membership in the IOTC is open to two basic categories of countries: coastal States that are situated in the region or those whose vessels fish in the area (as usual, the EU is made a special case, but it clearly fits in as a DWF State, though France and the UK are full members on behalf of their islands in the Indian Ocean). No distinction is made between the rights and obligations of the two types of members, though two of the three criteria upon which fees are assessed relate to stage of development (according to gross national product or GNP and Organization for Economic Co-operation and Development or OECD status). Being the largest catcher in the area, a member of the OECD and having a high GNP, the European Union pays 30 per cent of the budget (43 per cent with France and the UK included).

The WCPTC goes much further in outlining the problems faced by developing countries. The Preamble to the Convention mentions the “ecological and geographical vulnerability of the small island developing States” and their need for, among other things, “specific assistance, including financial, scientific and technological assistance”. Among the principles for conservation and management is the need to “take into account the interests of artisanal and subsistence fishers” (Article 5 of the UN Straddling Stocks convention). “Due consideration to the respective capacities of developing coastal States” must be given when implementing the provisions in exclusive economic zones (EEZs) (Article 7). Article 8 requires that, when implementing conservation measures, the “respective dependence of coastal States and the States fishing on the high seas” must be considered. The criteria for allocating access to stocks must include “the needs of small island developing States”, the “needs of coastal communities” and “the fishing interests and aspirations of coastal States.” Finally,

⁵More information can be found in the ICCAT reports, especially those of the Ad Hoc Working Group on Allocation Criteria. See the ICCAT Annual Report, available at <http://www.iccat.es/downloads.html>.

Article 30 lists several requirements of developing States, including the need “to ensure access to fisheries by subsistence, small-scale and artisanal fishers and fishworkers, as well as indigenous people”.

As with the IOTC, fees shall be based upon, among other criteria, “national wealth”.

It is in its eligible membership, as well as the conditions for its entry into force, though, that the WCPTC is most different from earlier RFOs. Most unusually, Article 34 specifies which countries are eligible to sign and ratify the convention⁶. The only non-coastal State which is allowed to sign is Canada (France, the UK and the US all have States or territories in the area). Other countries may only be invited to accede after the entry into force of the convention and by consensus. The EU is specifically mentioned in this paragraph as a “regional economic integration organization”.

Entry into force requires ratification by three States north of 20° North latitude and seven States south of 20° North. If the northern countries don't rush to ratify this convention, then after three years, it can enter into force with 13 ratifications. It should be noted that all members of the South Pacific Forum Fisheries Agency are situated to the south of 20° North latitude.

This is a most unusual structure, clearly designed to keep control in the hands of the coastal States. Its controversial nature can be gauged from the Final Act of the High Level Conference that adopted the Convention, where it states that the Chairman “informed the Conference that all efforts at reaching general agreement had been exhausted.” The text of the Convention was adopted, but only after a vote. At the meeting of the IOTC in December 2000, both Japan and the EU complained about various aspects of the Convention, while Australia welcomed it.

Time will tell whether this model of convention leads to a more equitable distribution of the benefits from the fisheries resources of the western Pacific.

Curiously, the countries around the western Indian Ocean have concluded an agreement which includes only the coastal States—the Western Indian Ocean Tuna Organization (WIOTO). Rather than be a regulatory body, its objectives are “to promote co-operation and co-ordination among its members” in respect of several areas: harmoniza-

tion of fisheries policies; relations with DWF nations; surveillance and enforcement; fisheries development, including of fishing capacity and processing; access to EEZs of other members. Membership is only open to certain coastal States⁷, which may subsequently allow other “independent” coastal States to adhere. The WIOTO entered into force in 1994 and currently has four members (Comoros, India, Mauritius and Seychelles), but is inactive.

5 Pirates in the Indian Ocean

As elsewhere, pirate fishing by vessels flying flags of convenience (FOCs) is a serious threat to the tuna fisheries in the Indian Ocean. In the IOTC databases, certain of the catches by these fleets are referred to by the lovely euphemism of ‘nei’—not elsewhere included.

There are two types of ‘nei’ statistics, as far as the IOTC is concerned. The first comes from vessels that report their catches, but not by the flag State. A good example of this is the purse-seiners that belong to EU shipowners but which fly flags of convenience. The second is vessels which do not report their catches in any way, and which have to be estimated by all sorts of indirect means. These include the longline fleets flying flags from Belize, Panama, Honduras, and so on. The fleet of small longliners in this category has increased in size in the past several years.

According to the most recent IOTC catch database, catches by ‘nei’ vessels, plus catches attributed to Belize, Netherlands Antilles and Panama, amounted to 166,308 tonnes in 1999, or 12 per cent of the total declared catches for that year. In other years, vessels flying flags from Liberia, St. Vincent and the Grenadines and Malta also had significant catches. This is surely an underestimate of the total catches made by FOC vessels, as not all of the vessels are included.

In other words, at least 12 per cent of the fishing in the Indian Ocean is made by vessels which are completely outside any regulatory framework, and are free to fish in any way they choose, with no controls or overseer. As the scientific committee of the IOTC noted, “Control of FOC vessels remains the major constraint to management of tuna fisheries.” Last year, Japan presented a resolution,

⁶ Australia, Canada, China, Cook Islands, Federated States of Micronesia, Fiji Islands, France, Indonesia, Japan, Kiribati, the Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, the Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, United Kingdom of Great Britain and Northern Ireland (in respect of Pitcairn, Henderson, Ducie and Oeno Islands), United States of America, and Vanuatu.

⁷ Comoros, India, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka, Tanzania.

which, if adopted, would allow the IOTC to impose import bans on bigeye tuna coming from FOC vessels. The matter will be discussed at the next meeting in December 2001.

The Europeans claim that, as the FOC purse-seiners they own dutifully report their catches, somehow their FOC vessels are 'acceptable'. But reporting catches is only one small part of responsible fishing! At the present time, it is true that there are no conservation and management measures adopted by the IOTC. But a vessel register is in the works, which will eventually lead to limits on fishing capacity or effort⁸. Similarly, discussions have begun on a control and inspection scheme. When these programmes are operational, all vessels flying the flags of non-members will not be required to abide by them. So, while it is helpful of the Europeans to report their catches, it does not absolve them of the responsibility of fishing under the flag of a country which is a member of the IOTC and which enforces its flag State responsibilities. Indeed, the Straddling Stocks convention stipulates that only countries which are members of a regional fisheries organization shall have access to the fishery resources.

I recently did an analysis of the vessels owned by European interests yet registered outside the European Union. In all, 10 per cent of the EU-owned vessels were flagged in non-EU countries, including 8.5 per cent of the French fleet and 19 per cent of the Spanish, the two most important European fishing countries in the Indian Ocean. They had vessels registered in, among other places, Belize (51 vessels), Honduras (29), St. Vincent and the Grenadines (27) and Sierra Leone (12).

The EU is one of the biggest users of flags of convenience to evade fisheries management measures. And, as bigeye are caught in purse-seines, the European's favourite fishing gear, would Spain and France be subject to import bans?

6 Gear Selectivity

Fishing for tuna using either purse-seines or longlines cannot be described as "selective". As discards are rarely noted by the skipper, few records exist, other than scattered observer reports and deductions made by inspecting landings. For purse-seiners targeting yellowfin and skipjack, discards are thought to vary from zero to 30 per cent of the catch, depending on the type of fishing being con-

⁸At the IOTC meeting in 2000, Japan tabled a draft resolution to limit or reduce the fishing capacity of large scale longliners fishing for bigeye tuna; unfortunately, this idea received little support.

ducted (setting seines around floating objects leads to much higher by-catch and discards, than setting around a free swimming school of tuna). Most non-target species are thrown overboard, although wahoo, billfish and some species of smaller tunas may be kept. There are also unconfirmed reports of large discards of juveniles. In the eastern Pacific, where detailed records of catch composition have been kept for several years, the level of discards are very high, including large quantities of small yellowfin and skipjack. It is quite probable that a similar situation exists in the Indian Ocean.

For longlines, the levels of discards are thought to be even higher, and can include non-target species, fish damaged by sharks and cetaceans and juveniles of the target species. Again, few data are available.

Given that artisanal fisheries are so important in the Indian Ocean, one has to ask what impact these discards by the industrial fisheries have. With up to 30 per cent or more of the catch being thrown overboard, of both tuna and non-tuna species, the artisanal fisheries, including those for non-tuna species, are doubtless affected in some way. This should be a matter for urgent study.

Scientists have expressed concern about the size of the catches of juvenile bigeye tuna. These are especially pronounced when setting the seine around floating objects, an increasingly popular method of fishing. Consideration was given last year to establishing a closed season for fishing on floating objects for a few months a year when catches of juveniles were particularly high, but no decision was taken, at least in part because the IOTC did not think it possible to ensure that the moratorium would be respected by all seiners. Here is a good example of the type of problems posed by, for example, EU-owned seiners which fly flags of convenience—there is no way to make them respect any such regulation.

7 European Union Policy in the Indian Ocean

The European fleets have been active in the Indian Ocean since the early 1980s. The first French purse-seiner began exploratory fishing in 1980, but the commercial fleets of France and Spain only showed up in 1984. This was, in fact, a displacement of the seiner fleet from the eastern Atlantic, prompted by poor fishing for yellowfin in 1984. Apparently, this

was due to the repercussions of an El Niño and not the depletion of the yellowfin stock in the Atlantic, as the following year the catches were once again at a normal level. Until the arrival of the Europeans, the only industrial fleets were the longliners from Japan, Korea and Taiwan. The two European countries quickly increased their catches and Spain is currently one of the largest fishers in the region (France catches somewhat less).

The EU pursues its fishing interests in the Indian Ocean through several means. Most obvious is its network of fisheries agreements. There are four with Indian Ocean countries: Seychelles, Comoros, Madagascar and Mauritius. The EU views these as purely commercial in nature, as what former Fisheries Commissioner Emma Bonino called “pay, fish and go” agreements. In exchange for payments of cash (3.45 mn Euros annually for the Seychelles, less than 1 mn Euro for each of the others), the EU fleets are allowed to fish for tuna in their EEZs. While each agreement has a nominal catch limit associated with it, in fact, there is no limit to the fishing—if they want to fish more, they simply increase the payments. The seiners generally seek licences to fish in more than one of these countries at the same time, for they follow the tuna wherever it goes, which is not always completely predictable.

In addition to the lump-sum payment for the agreement, shipowners pay licence fees, based, in part, on declared catches. Obviously, no payments are necessary for catches taken on the high seas, or, in the case of France, in the waters of its many territories in the region, so disputes often arise over the origin of the catches. The seiners have satellite systems on board, but, with few observer programmes, allocation of catch to one EEZ or another, or the high seas, can be problematic.

The Structural Funds of the EU provide generous subsidies to EU companies to set up permanent joint enterprises (and, previously, temporary joint ventures) with companies in third countries. A list of these enterprises has not been made public, but it is known that some countries have devoted considerable amounts of money to them.

Shipowners can also profit from the Structural Funds to reflag their vessels. In the past 12 years, a total of 746 fishing vessels were exported from the EU. An unknown number of these received subsidies from the EU and their respective Member States. Several Indian Ocean countries were the recipients of these: Australia (2), Iran (2), Madagascar (1), Mozambique (17), Malaysia (1), Saudi Arabia (2), Sudan (12), Tanzania (3) and South Africa (12). Many more went to FOC countries: Nether-

lands Antilles (2), Belize (1), Liberia (2), Panama (22), Sierra Leone (5), Trinidad and Tobago (1), St. Vincent and the Grenadines (2) and Vanuatu (1). Again, it is not known if the owners received subsidies. In many of these cases, the vessel owner simply sets up a shell company in the destination country, but retains true, or “beneficial”, ownership of the vessel and, therefore, maintains control over its activities.

Finally, the Community imports fish to make up for its chronic deficit. One problem that can arise here is over the “Rules of Origin”. The Cotonou Agreement (the new Lomé Convention) specifies that Africa-Caribbean-Pacific (ACP) countries are allowed to export fish duty free to the EU, but there are very precise rules over what is to be considered “ACP fish”. There have been several cases where a country has exported fish to the EU, but the Community refuses to accord it duty-free status, arguing that it does not conform to the rules of origin. The reason for this is that the EU wants to garner as much as possible of both the employment generated by the fishing activities and the value added to the catch during transformation. They truly want it both ways—to catch the fish and to eat it too.

8 Europe and the Coastal States

As noted above, the IOTC states that the special interests of the developing coastal countries must be recognized, and there is some evidence that that promise is to be kept. What will the EU do about that?

In the European Commission, there are separate Directorates-General (DG) for “fisheries” and “development co-operation”. While the latter, doubtless, takes a favourable view of the aspirations of developing States to develop their fisheries, that view is not entirely shared by the fisheries DG. Their primary objective is to maintain the supply of fish to the EU market, to defend the interests of EU fleets and to conserve fish stocks in their home waters. There are frequent differences in policy between the two DGs.

An appropriate precedent can be found in the Atlantic Ocean tuna fisheries, managed by ICCAT. The EU is a dominant power in ICCAT, as it is both a coastal and a DWF State, in addition to paying for much of the budget. Over the past several years, a number of developing coastal States have begun to create or enlarge their fisheries, notably South Africa, Brazil, Namibia and Mexico. At the same time, several of the more valuable stocks

are overexploited, even depleted (bluefin, bigeye, swordfish, marlin). ICCAT has established quotas for some of these stocks and capacity limits on the fleets exploiting others. The developing States argue that they should be given access to these stocks, especially when they are found in their EEZs. The EU is arguing very strongly against that position. An Ad Hoc Working Group on Allocation has been created, but so far no agreement has been reached, with different countries arguing in favour of criteria that would increase their share of any quota. The battle promises to continue for a while yet.

If this is anything to go by, then the EU could be expected to resist a significant shift in access to stocks to coastal States that do not have a history of fishing. As no formal management regulations have yet been established, it is too soon to tell, and the articles in the IOTC Convention should give the coastal States some support.

Further, the European Commission has recently published a Green Paper on the Future of the Common Fisheries Policy. In it, the Commission recognizes "Developing States' requirements and legitimate aspirations to develop their own fisheries." It also states quite clearly that the objective of ensuring access to fish stocks in third country waters "should be achieved in a manner coherent with other objectives, such as development and environ-

ment policies." The EU must be held to these statements.

9 The Future?

There is currently a debate about the future of EU-third country fisheries agreements. While they do present many difficulties, they have one advantage over other forms of "co-operation" with third countries and that is that their terms and conditions are open to public input. They are very expensive, though, from the point of view of the EU, and some interests are advocating other avenues, one of the favourites being the establishment of joint enterprises. These can be subsidized under the EU Structural Funds or set up with no public aid. While this may seem to be a relatively easy and inexpensive way to get access to modern fishing technology, it is important to remember that the European interests generally retain control over the vessels and make sure that most of the production goes to the EU. In fact, one of the criteria for setting up a joint enterprise with the Structural Funds is specifically to supply the EU market.

If the Indian Ocean coastal States wish to develop their own fisheries, and retain control over how they are conducted, then this might not be the most appropriate model to follow.

European Union Interventions in the Fisheries Sector in the Indian Ocean: A Passport for Equity or Road to Hell Paved with Good Intentions?

Béatrice Gorez *

Abstract

A summary of the main kinds of interventions by the European Union (EU) in the fisheries sector in the Indian Ocean is provided, highlighting (in selected cases) their impact, and forecasting what direction these interventions are likely to take in the future.

EU interventions in fisheries are made through two main policy frameworks: for development co-operation (previously under the Lomé, and now the Cotonou Convention); and for fisheries (through the Common Fisheries Policy or CFP).

The paper shows that, overall, EU interventions in the fisheries sector in the Indian Ocean are more influenced by EU-centred fisheries and trade-related objectives than by the EU concerns for development co-operation. This trend is likely to increase in future.

Keywords

Fisheries agreements. EU. Lomé Convention. Cotonou Convention. Common Fisheries Policy. Flags of convenience.

Summary

The objectives of this paper are to:

- summarize the main kinds of EU fisheries-related interventions in the Indian Ocean Region;
- use particular cases to highlight the combined impact of these interventions;
- predict which elements are likely to play an important role in the shaping future EU-Indian Ocean fisheries relations.

EU interventions in the fisheries sectors of Indian Ocean countries are governed by two main policy frameworks:

- Development Co-operation, previously under the Lomé, and now under the Cotonou Convention. The various policy instruments

in this framework include the use of European Development Funds (EDF), technical assistance, loans from EIB (European Investment Bank). The main policy objectives include poverty reduction and sustainable development.

- Common Fisheries Policy (CFP), where the instruments include subsidized access through fisheries agreements and subsidies for joint ventures. The policy objectives include securing access rights for EU vessels and securing fish supplies to EU markets (processing industry and consumer demand).

EU Development Co-operation interventions divide Indian Ocean countries into two main groups: African, Caribbean and Pacific (ACP) States¹, signatory to the erstwhile Lomé Conventions, and current Cotonou Convention. Other States, signatory to various Asian and Latin American agreements.

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¹ACP refers to the African, Caribbean and Pacific States that are party, previously to the Lomé, and now to the Cotonou Agreement.

It would seem that, particularly in ACP States, Development Co-operation interventions are more important from a political than financial perspective. Two main kinds of interventions are described below.

In those countries where the EU has no particular fisheries interests, coastal zone management and regional co-operation are the main activities, with support provided directly to local initiatives. In those countries where the EU has particular fishing-related interests, initiatives are geared mainly towards providing a favourable environment for EU-“owned” activities (for example, in support of export-related aquaculture, industrial fisheries, and so on).

EU-ACP Development Co-operation has evolved and adapted to a changing global context. This has changed markedly over the last three decades, in the context of notable events, including the end of the Cold War (and the support of eastern European countries), the emergence of Asian nations and the development of the EU market for fish. These have encouraged the EU to develop partnerships with new actors. Globalization and the emergence of the World Trade Organization (WTO) have also had a major influence on EU policies. In 2000, a new framework for development co-operation was established with the signing of the Cotonou Agreement (replacing the previous Lomé Conventions).

Four main changes are noteworthy:

- participation of civil society (non-State actors) in programme implementation. Under the provisions of the Cotonou Agreement, 15 per cent of the aid disbursed is to go directly to non-government organizations (NGOs).
- economic reform, including liberalization and deregulation, to promote economic growth. This may favour EU enterprises more than local enterprises.
- promotion of free trade, by removing the preferential arrangements (trade preferences) provided under the Lomé Convention. The emphasis now is on WTO compatibility. The removal of subsidies in general could have the potential to benefit the competitive advantages of the small-scale sector.
- developing regional economic integration through the promotion of “free trade zones”. In the Indian Ocean context, the Southern Africa Development Community (SADC) is of particular relevance.

Under the Common Fisheries Policy, the main interventions relate to the EU’s problems of overcapacity, to the need to secure fish supplies (both for its processing industry and consumers), and to securing access for its distant-water fleet to tuna resources. In the case of the former, subsidized vessel transfers are the main kinds of interventions; in the latter, it is the activities of EU tuna vessels fishing under “cash for access” fisheries agreements. These are currently signed with four countries in the region: Comoros, Madagascar, Seychelles and Mauritius. Also, the EU plays an important role in the Indian Ocean Tuna Commission (IOTC), trying to keep its lion’s share in the access to regional tuna resources.

Illustrating these different kinds of interventions are the cases of Seychelles (which has had a fisheries agreement with the EU since 1984), and Mozambique (where a bilateral fisheries agreement was denounced in 1993, and European Investment Bank (EIB) loans/fisheries subsidies have been used since to benefit EU fishery enterprises through joint ventures).

Future directions of EU interventions are likely to emphasize economic and trade aspects, and participation of non-State actors. Given the current global context (overcapacity in EU waters, lack of control in Indian Ocean fisheries and lower production costs in Indian Ocean countries), it is likely that many EU enterprises will “re-flag” their vessels to the registers of Indian Ocean countries under joint venture arrangements, and relocate their processing operations there.

To counter these threatening trends, Indian Ocean countries should:

- build up regional alliances to manage, conserve and regulate their fisheries, and negotiate joint access arrangements with distant-water fishing fleets, but also to encourage trade in the region in which artisanal fishermen can be involved.
- promote the participation of small-scale coastal communities in the development and management of their fisheries.

1 Introduction

There are several facets to EU institutional interventions in Indian Ocean fisheries, and they are governed by two main policy frameworks:

On the one hand, they are part of a wider co-operation framework (for example, the EU-ACP Co-operation, under the Lomé Convention and subsequent Cotonou Convention frameworks), based on such policy objectives as sustainable development and poverty alleviation in the third country.

On the other hand, they are part of other policies which have as primary objectives the promotion of EU fisheries interests, for example, interventions made through the Common Fisheries Policy (subsidized joint ventures or bilateral fisheries agreements) or loans from the EIB².

It is not easy to determine the combined impact of these various interventions³ in a given third country. However, in many cases, the results of EU interventions in third countries have been strongly influenced by the fact that the EU is an important distant-water fishing nation with the largest market for fisheries products in the world.

The reasons for this bias include:

- the idea, widely held in the EU and third countries' institutions, that the European model of industrialized fishing is the only way for Southern fisheries to evolve. For example, an official from the Fisheries Directorate said, in a debate about artisanal fisheries in Mauritania and Sénégal⁴: "We must question if promoting artisanal fisheries is tantamount to promoting the development of poverty rather than wealth"⁵. Consequently, monies disbursed to promote EU development model in Southern countries (for example, EIB loans, bilateral fisheries agreements or joint ventures), far outweigh monies allocated to the fisheries sector in general, and to the small-scale fisheries sector in particular, through co-operation mechanisms.
- The strong influence of EU industrial fishing representatives in the fisheries policymaking institutions was due, until recently, to their voices being the only ones heard when fisheries relations between the EU and Southern countries were being discussed.

²Although the EIB primary objectives are to promote EU interests, the loans provided are often included in the co-operation and development package proposed by the EU.

³Since 1995 (the signing of the Maastricht Treaty) European NGOs have been denouncing the lack of coherence between these 2 types of interventions and their negative impacts on small-fisheries in third countries.

⁴West African artisanal fisheries (e.g. Sénégal and Mauritania) are highly dynamic and provide employment, food and export revenue to the state, thus fulfilling EU development objectives. To question whether such artisanal fisheries contribute so plainly to wealth creation clearly shows that it is a question of ideology rather than performance which is being raised.

⁵The current recognised failure of the EU Common Fisheries Policy (in terms of making its fleet adequate to available resources) and of the EU development model may be a time for questioning the "export" of this model in third countries.

2 EU Interventions: Development and Co-operation

For historical and political reasons, Indian Ocean countries have built their Development and Co-operation relationships with the EU under different schemes, namely, within the ACP-EU framework, under the four consecutive Lomé Conventions (from 1975 to 2000). The Lomé Convention has recently been succeeded by the Cotonou Convention (signed in Benin in 2000). In the Indian Ocean Region, ACP countries include, Madagascar, Comoros, Seychelles, Mauritius, Tanzania, Kenya and Somalia, among others, through other bilateral or regional agreements (for example, the Asian and Latin American or ALA agreements).

The role played by EU Development and Co-operation policy may be more important politically than financially. For example, the total amount of money provided by the EU to the ACP countries over the last 15 years (under Lomé III and IV) represented less than 50 per cent of the losses incurred due to collapsing commodity prices. Despite this, many ACP countries consider the political dialogue intrinsic to the EU-ACP development co-operation partnership as important a platform for foreign relations, as it is for disbursing financial and technical development aid.

In the Treaty of the EU (signed in Maastricht in 1995 and consequently updated in Amsterdam in 1998), the EU's Development Co-operation policy objectives are the promotion of sustainable development and poverty alleviation.

Since the 1990s, the fisheries component of the EU's Development Co-operation programme with Indian Ocean countries has had two declared priorities:

- to promote coastal zone management and sustainable exploitation of marine resources; and
- to promote regional co-operation and integration.

Keeping these objectives in mind, it is interesting to see in which baskets the financial aid has

been placed during that period. When looking at EU monies spent in the Indian Ocean Region (refer to the Annex) through Development Co-operation (more than 100 mn euros), certain elements are apparent:

Unsurprisingly, coastal zone management and regional co-operation receive particular attention. About 35 per cent of monies disbursed are linked in one way or another to these two objectives.

A difference can be noted between those countries where EU has fishing interests and those countries where it does not:

- In India, for example, where there is very little historical record of EU fishing activities, almost all the support has been given to the small-scale fishing sector (inland or marine). Much of this has been provided as co-funding through European NGOs with local partners.
- On the other hand, in Mozambique and Madagascar, where the EU has a historical record of fishing activities, development aid has been mainly devoted to create a favourable environment for EU-“owned” activities (that is, support to industrial aquaculture, industrial fishing, and so on).

Madagascar and Mozambique are amongst the poorest countries, and the small-scale fishing sector is vital for sustainable local development, (*vis-à-vis* food security, employment creation and income generation). Despite that, the support received by the small-scale sector from EU Development Co-operation is tiny.

In such cases where support is given through development aid to EU-owned activities in industrial aquaculture and industrial fishing, adverse effects can be expected on local sustainable development, particularly for the small-scale communities.

It should also be noted that in places like Mozambique and Madagascar, EU operators are powerful, well-organized and well-connected to the EU and local institutions, while the small-scale sector is poorly organized (unlike, for example, in India).

The importance given to providing support to the small-scale sector seems to depend on its degree of organization and the potential for a conflict of interests with EU-owned fishing fleets.

⁶European Development Fund

⁷D.David, Editor, *ACP-EU Courier* magazine

3 Evolution of ACP-EU Co-operation

It is interesting to look more closely at the ACP-EU partnership as it is the most elaborated of EU partnerships with Southern countries, and as such could “show the way” that other partnerships with Southern countries should go.

Within the ACP-EU co-operation framework, EU interventions are not limited to financing programmes/projects alone.

Some of the tools to development co-operation policy, for example, the EIB (European Investment Bank), can have a major impact on development prospects of some fisheries. The EIB is the financing institution of the EU, and members are the EU Member States who all subscribe to its capital. The EIB contributes to the EU Development Co-operation programme and provides loans (from its own resources) and risk capital (from community budget or EDF⁶) to public and private borrowers.

With regard to investment, the European Investment Bank plays a major part in supporting the private sector, often with the objective of supporting EU interests. In the case of Mozambique, EIB provided an important loan to Pescamar (a sister company of Pescanova) to develop its fishing activities (mainly shrimp fishing) in the coastal zone. In the same way, in Madagascar, EIB invested in industrial aquaculture development. It is not very clear how these projects are chosen and fit in with the framework of EU development co-operation objectives (sustainable development and poverty alleviation).

In 2000, a new 20-year agreement was signed between the EU (15 states) and 77 ACP countries: the Cotonou agreement. As reported by one observer⁷, “it addresses two issues: although economic strategy plays a major role, the fact is that development is first and foremost political and the fact is that globalization cannot be synonymous with poverty, inequality and exclusion”.

Consequently, some fundamental changes have been introduced which will affect not only EU-ACP relationships but also, as this is the likely model that will develop with other Southern countries, most of Indian Ocean countries. These changes include:

3.1 *Bringing in civil society*

Encouraging participation of civil society is seen as a way to politicize debates. But, until now, the most

noticeable change concerns funding: EU aid to ACP countries was traditionally made available through the governments of ACP countries. In the Cotonou agreement, up to 15 per cent of aid is directly available to NGOs, like fishworkers organizations.

But bringing in civil society should go way beyond involving fishworkers organizations in aid financed projects. There is a need to involve fishworkers organizations and communities in the design and implementation of fisheries policies and fisheries relations with the EU. This is one of the key issues currently being debated in EU institutions⁸.

3.2 *Economic reform*

The EU stresses the importance of creating the necessary conditions for economic growth in ACP countries, which means more liberalization, deregulation and non-discrimination against foreign investors.

Unless emphasis is put on participation of the coastal fishing communities in design and implementation of fisheries policy for sustainable development and poverty alleviation, this could lead in some cases to de-nationalisation of ACP fisheries interests and the reproduction of unsustainable industrial practices, marginalising the small-scale sector.

This trend may be reinforced by the need for the EU to “get rid” of part of its fleet (to reduce overcapacity) and increasing difficulties to get access to non-EU waters through bilateral fisheries agreements.

3.3 *Move towards free trade*

Under successive Lomé conventions, ACP countries enjoyed important trade preferences. ACP countries were allowed to export their fish products to the EU without paying import taxes. These trade preferences were non-reciprocal. Fisheries exports to the EU from ACP countries have, therefore, grown faster than fisheries exports from any other group of countries. The impact of these trade preferences on the small-scale fisheries sector have been diverse. In countries like Sénégal, where the small-scale sector is the main exporter and EU its main

market, this provided important opportunities. In other places, the result was that small-scale fishermen had to face increased competition from the industrial sector, as a result of these export opportunities. As the rule of origin applies⁹, some problems may arise in the export of processed fish on EU markets. Non-tariff barriers are also being developed, such as hygiene standards.

With the new (Cotonou) convention, the main principle is to have, in the long-term, a “WTO-compatible” agreement. This means progressively going towards the removal of all tax barriers. Some exceptions will be made for LDC-ACP, including, in the Indian Ocean Region, Comoros, Madagascar, Mozambique, Somalia, Tanzania, Sudan, etc. Specific measures will be taken for island ACP States including Mauritius, Seychelles, Comoros, Madagascar.

The Cotonou agreement is designed to promote environmentally and socially acceptable trade. Such a move should open up opportunities for small-scale fishermen. The absence of small-scale fishermen in the current debate on ecolabelling in the EU (towards environmentally acceptable trade) makes it very doubtful that there is the political will in the EU institutions to encourage this.

There are also other serious threats to the small-scale sector. For example, the dumping of EU-caught frozen fish on ACP markets may increase dependency on foreign markets and hamper the development of regional trade.

3.4 *Development of a regional economic integration*

From an EU point of view, regional co-operation and moving towards “free trade zones” is a key change in the EU-ACP relations, necessary to promote “integration of ACP countries into the world economy”. The success of regional co-operation depends on a number of pre-requisites, including the need for those countries involved in co-operation to have an equal level of development and a tradition of trade between its members (to counter a potential increased dependency on foreign markets).

An interesting experience is that of SADC (participating States include Angola, Namibia, South

⁸A debate on this subject is organised at Parliamentary, administration and Ministerial level, partly thanks to campaigns (organised since 1995) by NGOs collaborating through the Coalition for Fair Fisheries Arrangements.

⁹Rule of origin means that fisheries products exported to EU market should have their origin (i.e. the nationality of the vessels) from either an EU or ACP vessel. In countries which have developed local processing and are trying to export processed fish products (like canned tuna) to the EU, it sometimes causes problem as there is no local tuna fleet and the EU landings are not sufficient to ensure profitability of the local processing sector. They therefore have to get part of their supply from non-EU/non-ACP origin but still export to EU markets.

Africa, Mozambique, Mauritius, Seychelles and Tanzania). In the last decade, countries participating in SADC have developed a regional dynamic and autonomous policy framework, like a fisheries policy (in 2000). It is interesting to see that some steps are being taken in SADC's fisheries policy to recognize the importance of small-scale fisheries.

But trade among the countries in this region does not account for more than 5 per cent of the total volume of economic activity. So, any discussion of integration in southern Africa brings up the issue of co-operation with countries in the south-western Indian Ocean, where traditional trade relations exist and could be developed. Ways of helping small-scale fishermen to develop such regional trade relations (for fisheries products but also for inputs) should be looked at by, for example, developing better conservation methods, and collection and transport infrastructure that can be used by small-scale fishermen. Increasing this regional trade may be interesting as a way to resist the negative impact of the move towards free trade advocated by, amongst others, the EU.

Mauritius, for example, joined SADC in 1995. It took part in the cross-border initiative and later mooted the idea of a wide regional group with other countries to be called the Indian Ocean Rim Initiative. According to its designers, this group would involve all countries around the Indian Ocean, from South Africa to Australia, including India and the Gulf States. As an observer said, "This is a commendable initiative, but one which will not be possible in the near future. But is it not the main point of co-operation to make a start?"

In conclusion, at the beginning of the EU-ACP relations in the mid-1970s, the political and international trade frameworks were different than what they are now. That era was a period of decolonization and Cold War, and ACP countries were politically "relevant" as a block to the European countries. The end of the Cold War changed relations between European countries and the Southern hemisphere. Today, there is a tendency for the EU to build new partnerships based on the past ACP-EU experience, but including in the partnership, new actors. In this context, on trade aspects, the emergence of Asian countries needs to be taken into account, which, in view of their extremely low production costs, are competitors with the ACP countries for a share in the European market. In terms of development aid, eastern European neighbours receive more attention from donors than that was the case before the fall of the Berlin wall. The possible participation in a "ACP-EU-like" co-operation

framework by countries that did not sign the Lomé Convention, the progressive end of preferential tariffs and the introduction of a principle of reciprocity in EU-ACP relations will change current co-operation completely.

4 EU interventions: the Common Fisheries Policy

The CFP has been designed to manage EU fishing fleets and activities. As part of the EU fleets and fishing activities happen in third countries' waters, choices made in the CFP have an obvious impact on third countries, like the choice to privilege fishing capacity transfers to third countries as a way to diminish EU fleets' overcapacity.

There is also a specific "international dimension" to the CFP, which manifests itself mainly by the signature of bilateral fisheries agreements. In the Indian Ocean, the tuna stocks spend much of their time in the exclusive economic zones (EEZs) of the coastal States, and the EU has four fisheries agreements in the region: with Comoros, Madagascar, Seychelles and Mauritius.

The international dimension of the CFP also covers the participation of the EU in different regional management bodies, like the Indian Ocean Tuna Commission.

4.1 *Bilateral fisheries agreements: the case of Seychelles*

The four bilateral fisheries agreements in the Indian Ocean Region are "cash for access" agreements granting EU fishing possibilities for tuna. In the last years, there has been a tendency from the EU fisheries administration to present these fisheries agreements as co-operation agreements and financial compensation of the fisheries agreement as aid. There are two reasons for this: one is to disguise subsidies and make them look like aid; the other is to have stronger leverage to exert pressure on the third State and to intervene in the design and implementation of its fisheries policy.

Several aspects can be examined in fisheries agreements: the level of access granted, the specific actions decided under the financial compensation, the level of compulsory landings and the amount of the financial compensation compared to the amount of development aid allocated to those countries. It is interesting also to see how these agreements interact with the co-operation interven-

tions the EU has with these countries and what the “combined impact” of both interventions are.

The EU-Seychelles fisheries agreement of 1984 is the most important tuna agreement between the EU and a third country. The new agreement protocol will cover the period 18 January 2002 to 17 January 2005. Fishing opportunities remain at the same level of 46,000 tonnes of tuna per year. The number of EU vessels has been reduced from 79 to 67 (40 tuna seiners and 27 surface longliners).

The EU contribution will remain at 3,460,000 euros per year. The local fisheries sector will receive financial support from the contribution to help its development. Measures to promote sustainable fisheries in the Seychelles will also be financed from this contribution. These measures will enhance scientific research, and control and monitoring of fisheries activities and training. Rules have also been agreed on the presence of observers on board EU tuna vessels and the use of the vessel monitoring system (VMS).

On the ACP-EU co-operation side, financial resources resulting from the Lomé I and II have been particularly channelled into social issues and improving living conditions, namely, the housing and health sectors. Under Lomé III and IV, allowances from financial co-operation were used to develop fishing (and tourism). Under Lomé IV, Seychelles also obtained assistance from the EIB for its private sector. So, in addition to projects (like the rehabilitation of a tuna quay), fisheries relations between the EU and Seychelles covered a number of other areas: trade arrangements in the fishing sector, EIB loans, and regional co-operation directed through the Indian Ocean Commission. The overall total (interest subsidies and risk capital operations) provided under the four Lomé Conventions is ECU 8.08 mn.

Trade co-operation with Seychelles, supported through the general trade preferences available under the Lomé Convention, includes special derogations from the rules of origin. A derogation relating to canned and frozen tuna was granted in 1993 and modified in 1994. It covers 1,800 tonnes of canned and frozen tuna annually.

Compared to the 3,460,000 euros/year received through the fisheries agreement in the last 10 years, only an average of a tenth of that amount was received through Development Co-operation schemes. This situation is the average situation in which ACP countries signing fisheries agreements find themselves: the signing of a fisheries agree-

ment, which is a “carpet selling” exercise, provides much more means than the co-operation framework based on a political dialogue and on long-term objectives.

4.2 *Subsidized transfer of vessels: the case of Mozambique*

The system of subsidized joint ventures has been put in place by the EU in 1990 to contribute to the reduction of the EU fishing fleet capacity which, at that time, was of 2.3 mn gross registered tonnage (GRT)¹⁰.

But other objectives also existed: to guarantee fish supply for EU markets; to maintain, even partially, EU employment; and, lastly, to offer alternatives to bilateral fisheries agreements. On this last point, third countries are increasingly trying to develop their own fleets and limit access in their waters to foreign boats.

In the Indian Ocean Region, the country that has seen a lot of subsidized joint ventures being set up is Mozambique. It has to be noted that Mozambique denounced its bilateral fisheries agreement with the EU in 1993, at the same time that these EU subsidized joint ventures were being set up. Another thing to note is the concentration of ownership that happened following the setting up of joint ventures. The main EU beneficiary is Pescamar, part of the giant fishing enterprise, Pescanova. Pescamar operates 19 freezer trawlers in a joint venture with Spain, exporting shrimp up to Spain. Mozambique is the largest exporter by value of frozen shrimps to the EU, accounting for more than 20 per cent of the value of ACP shrimp exports (up to 5,000 tonnes/year).

Artisanal fishing in Mozambique provides livelihood for more than 50,000 families, and supplies food for a large part of the population. In 1998 there were approximately 16,000 marine canoes in Mozambique.

It is not clear whether, where and to what extent competition exists between the artisanal sector and the industrial sector, but the attention given almost exclusively, in EU-Mozambique fisheries relations, to creating a favourable environment for Pescamar activities has a important opportunity cost for the small-scale sector. Particularly, it seems the role the small-scale sector can potentially play in meeting local food demand has been overlooked. Today, to meet the local demand for fish, it is necessary to import about 5,000 tonnes per year.

¹⁰EU fleet overcapacity is estimated, for some segments, up to 40 per cent.

The per capita yearly supply is estimated at 6 kg (in 1997), and, in recent years, the share of protein from fish in total animal consumption has increased to 23 per cent. The demand for fish in the coastal areas is high and is expected to grow, to match population growth (2.6 per cent annually). In order to maintain the present level of fish consumption, an annual increase of about 1,000 tonnes would be required. However, the demand could increase drastically if distribution problems were solved.

5 Future Directions for EU Fisheries Interventions

From an analysis of the evolution of the EU's two main policy frameworks (the Common Fisheries and Development Co-operation Policies) for fisheries interventions, and the different kinds of interventions they have promoted, it is likely that for fisheries relations with Indian Ocean countries, increasing importance will be given to:

- economic and trade aspects; and
- participation of the private sector and civil society ("less State, and more community-level participation").

Due to difficulties with signing new fisheries agreements (due to WTO rules on subsidies and local resistance), it is likely that the EU distant-water fleet will contract, with vessels "re-flagging" to the Indian Ocean or "flags of convenience" States.

Overcapacity and resource depletion problems in EU waters will encourage EU fishing companies to relocate their fleets to countries where there is still some resource potential, and/or where there is less control on fishing activities (in extreme cases relocating their vessels to a "flag of convenience" State. In such a context, the current trend towards exporting overcapacity through joint venture arrangements is likely to increase.

Also, higher production costs in Europe may push companies to relocate their operations to countries where processing costs are lower. For example, some Dutch companies are shipping shrimp for shelling to Morocco, where labour is cheaper.

Many Indian Ocean countries, whether ACP countries or not, meet these criteria (namely, resource potential, fish being less expensive to process, and less control over fishing activities). They will certainly be pushed to provide good conditions for the establishment of EU enterprises through, for

example, the establishment of free tax zones (as for tuna processing plants in the Seychelles and Madagascar) and investment in infrastructure development and improved surveillance.

These countries will need to clarify what kind of model they want as the basis for the long-term development of their fisheries. They will also need the strength to defend their positions against political and economic pressures from the EU. Two elements that could play in their favour are the building up of regional alliances (to manage, conserve and regulate fish stocks), and taking decisions and negotiating jointly on distant-water access rights. Taken together, Indian Ocean countries have potential in all segments of their fisheries sectors (capture, processing and marketing), but, individually, none of them can exploit this potential.

There are several constraints for greater regional integration: many Indian Ocean countries are more taken up with trying to solve internal problems and so have little capacity left to develop regional integration; many of these countries also face severe economic constraints. Often those countries in less desperate situations are more concerned with planning their own development than considering the opportunities that associating with their regional neighbours can offer.

Within the Cotonou Convention, significant monies (up to 15 per cent of the total) are to be made available for "non-State actors" (civil society organizations like NGOs, fishworkers' organizations and so on). Efforts should be made for these monies to be channelled into such projects that strengthen the capacity of community organizations to participate in decisionmaking and resource management processes, in particular, to participate in the design and implementation of fisheries policies and in determining how fisheries relations with the EU should be structured. The danger is that the political will of EU for this participation is derived from the principle of "less State, more private actors' participation", and this could, therefore, serve the EU private sector's aspirations, rather than local community's aspirations.

Participation proposed in fisheries agreements negotiations is interesting for fishermen to defend their access to resources. It can also be a first step towards a better dialogue between fishermen and their national administrations. It can also be a way to promote more effective financial support from the national government through a re-evaluation on the use of the financial compensation. The danger is that any financial support received through the financial compensation will be in exchange of

fishing rights for the EU, thus posing a major threat, in some cases, to the small-scale sector.

If these elements (regional alliances and participation) are not present in the future EU-Southern countries fisheries relations, this may lead to a process of “recolonization” of their fisheries by EU

fleets and interests. To some extent, this is already happening in places like Madagascar and Mozambique, where a big share of the national sector is owned by European companies, and where the fisheries policy is, first and foremost, at the service of these EU interests.



Annex
 EC Co-operation funds in Indian Ocean Seas/Ocean projects
 Period 1990–1998

Countries	EC funds	Main Projects	Objectives
Comoros	7 650 000	Development of artisanal fishing (\pm 45%) Harbour development (40%)	Promote traditional methods of fish catching and preservation
Madagascar	14 000 000	Aquaculture (loan EIB) (\pm 70%) Fisheries Infrastructure Nosy Be (\pm 20%) Improvement of food safety standards (6%) Improvement revenue of coastal communities (less than 5%)	Loan for operators and technical assistance to the Ministry to develop shrimp aquaculture
Mauritius	2 300 000	Regional planning of coastal zones (\pm 15%) Enhance competitiveness of the free port (\pm 85%)	Coastal zone management Improve facilities of the free port, provide equipment and other support to enhance competitiveness of the free port.
Mozambique	9 600 000	Transfer of fishing vessels (EIB loan) (\pm 50%) Technical assistance to the Ministry and fisheries enterprises (\pm 25%) Support to small-scale and medium-scale sector (\pm 20%)	PESCAMAR project Development of artisanal fishing (\pm 5%), experimental in shore fishing with small size liner trawler (\pm 15%)
Seychelles	1 700 000	Rehabilitation of the old tuna quay (95%) Establishment of fisheries legislation (\pm 5%)	
Somalia	60 000	Artisanal fisheries rehabilitation study (100%)	Micro projects, fishermen training

Countries	EC funds	Main Projects	Objectives
Tanzania	80 000	NGO cofinancing /university project (Christian Aid, VSO, University) (100%)	Duck-cum-fish culture, evaluation of establishing marine parks; support training program for small-scale aquaculture
Indian Ocean	17 900 000	Development of commercial tuna fisheries (\pm 35%) Coastal zone management (\pm 60%)	Sustainable use of the coastal resources
SADC countries	14 100 000	Monitoring control and surveillance (\pm 90%) SADC countries integration (\pm 10%)	
India	23 050 000	Inland fisheries development (\pm 85%) Assistance to the shellfish industry (\pm 5%) Support small-scale sector (NGO co-funding) (\pm 10%)	Strengthening fishermen's co-operatives Fishing equipment, SIFFS support, women in fisheries projects
Indonesia	2 350 000	Support offshore pelagic fisheries (\pm 95%) Support small-scale sector (\pm 5%)	
Sri Lanka	650 000	Support to refugees to be absorbed by the fisheries sector (100%)	
Thailand	1 900 000	Support fishing communities (\pm 55%) Coastal areas management (\pm 25%) Research (\pm 20%)	
Asia	7 400 000	Coastal zone management (including mangroves (\pm 90%) Tropical shrimp aquaculture impact study (10%)	

The Social Clause in the Fishery Agreements between the European Union and Countries of the Indian Ocean

Jean-Marc Barrey *

Abstract

This is a call for socially just principles to govern the signing of fisheries access agreements between the European Union and countries of the Indian Ocean Region.

Keywords

EU. Fisheries access agreements. CFDT. European Transport Workers Federation. Multi-annual Guidance Programmes.

Following numerous complaints from African seafarers and from other nationalities in the Indian Ocean working on French vessels through fisheries access agreements, our organization, Union Maritime CFDT, took up the issue of these seafarers' working conditions.

To start with, we felt that it was up to the French unions to offer suitable remedies, given the legal obligations of its flagged vessels.

Very quickly, we clashed with the boatowners, who, because they operated through local recruitment agencies, rejected all responsibility for the third country crews. After that, it seemed to us imperative to explore all possible ways of stopping these practices.

At the European level, the European Transport Workers Federation has now established eight basic principles to be included in a social clause as an integral part of each fisheries agreement signed between the European Union (EU) and a third country. These principles are based on the premise that the EU and its member States whose vessels benefit from fisheries access agreements have the responsibility to ensure that the rights of workers, both from their own nationalities and from third countries, are respected.

Principles

1. The EU should only negotiate fisheries access agreements with third countries if they accept to include a social clause to protect the crew members of the third country.
2. The social clause contained in the fisheries access agreement should be agreed as a common position of the unions from the EU member flag States and the unions of the third country, as well as the respective governments and administrations.
3. The unions should participate in the ratification of the social clause negotiated.
4. In no instance should the provisions of the social clause contained in the fisheries access agreement be less stringent than those of internationally recognized rules.
5. The EU member States who benefit from fisheries access agreements should be prohibited from using flags of convenience to engage in this kind of exploitation.
6. The social clause should be an integral part of the rules of registering in the Multi-annual Guidance Programmes (MAGP)¹ for tuna.

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¹MAGPs are national programmes to balance fishing capacity with fishing resources available in the European Union.

7. The organizations signatory to the social clause should have the right to inspect conditions aboard the ships and in the enterprises as well.
8. Each renewal or development of a new agreement should be the object of a new negotiation.

Our main proposals are that:

- the crew from the third country concerned get organized into unions, and, together with the unions from the flag State, actively participate in the negotiations of their working conditions;
- the unions of the flag State denounce the discriminatory practices of the vessel owners; and
- the European Commission takes up, and includes, a compulsory social clause in the fisheries access agreements that has been approved by all parties (the vessel owners, the flag State, the third country and the unions).

These points are essential and should be included in the issues under debate at the ICSF/IOI Chennai Conference, 9 to 13 October 2001.

We should:

1. denounce the practice of using intermediaries or employers in the third country, whom we call merchants of people;
2. obtain the full and entire responsibility of the vessel owners; and
3. denounce, equally, the lack of respect for the legal obligations of the flag State.

We would like to propose that, building on the above, the following essential points be addressed:

- contract of employment
- working and salary conditions
- aid provided by the EU to the third State should also be provided directly to recognized fishworker union organizations.

Economic and Social Implications of Multi-day Fishing in Sri Lanka

Oscar Amarasinghe *

Abstract

This paper presents a description of the multi-day fishing technology introduced into Sri Lankan fisheries, and its economic and social implications. This study is based on the results of field studies carried out in Dondra and Beruwala, two fishing villages in, respectively, the southern and western provinces of Sri Lanka.

Keywords

Sri Lanka. Multi-day fishing. Multi-day Operating Craft. Dondra. Beruwala.

1 Introduction

Open-access fisheries have long been considered as natural resources, which could be exploited with moderate levels of technical training and investment. Almost all countries endowed with these resources have hundreds of years of experience in harvesting them. In Sri Lanka too, by the onset of the Second World War, traditional fishermen had mastered techniques of harvesting fish with the available technology: *oru* or *oruwa* (outrigger canoes), *vallam*, *theppam*, beach-seines, etc. Yet, the post-war period saw high rates of growth of population and increased demand for food, which exerted tremendous pressure on agricultural and fisheries resources. Technological change in agriculture, brought about by the introduction of new high-yielding paddy varieties from the International Rice Research Institute (IRRI) in the early 1960s, which marks the onset of the 'green revolution' in Sri Lanka, enabled the country to meet its cereal demand to a considerable extent. Increased food demands too necessitated higher rates of ex-

ploitation of fish, but the seagoing ability of the traditional craft was not sufficient to bring in sizeable increases in fish landings.

In order to face the new challenges of the post-War period, the State, which assumed a regulatory role during the pre-War period, took an active role of reformism to expand fish production. Many technological innovations have been introduced to fisheries since then, with major emphasis on mechanization. The State's intervention in fisheries was mainly characterized by measures adopted to improve traditional craft and gear, introduction of new craft and fishing techniques and the development of fisheries infrastructure to facilitate reaping the full benefits of the above measures. Among these measures, the commencement of exploiting deep-sea resources through the introduction of multi-day craft in the late 1980s and early 1990s marks an important juncture in the development of Sri Lankan fisheries.

This paper intends to present a description of the multi-day fishing technology introduced into Sri Lankan fisheries and its economic and social im-

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plications. This study is based on the results of field studies carried out in Dondra and Beruwala, two fishing villages in, respectively, the southern and western provinces of Sri Lanka.

2 Multi-day Fishing in Sri Lanka

2.1 *The drive towards mechanization*

Due to the high dependency of traditional craft on weather conditions for sailing, efforts were made to improve the traditional fishing craft of Sri Lanka, namely, *oruwa* (outrigger canoe), *vallam*, *kattamaran*, and so on. Unless the sea was calm, these craft could not be taken for fishing operations and such operations had to coincide with changes in wind movements. The bimodal pattern of rainfall in Sri Lanka has given rise to two periods of stormy and rainy weather, which, in turn, influence traditional fishing operations, confining them to the non-monsoonal periods. The monsoon period is called the *warakana* (in the jargon of fishermen) and the non-monsoon period is called the *haraya*. In order to circumvent the problem of seasonality of fishing operations and to make way for year-round fishing, it was attempted to mechanize the traditional craft, which was done simply by fixing an outboard engine (8–15 hp) to the craft.

2.2 *Introduction of new craft*

Since the late 1930s, experiments have been conducted by the State to introduce suitable mechanized craft into Sri Lankan fisheries, and the results of such experiments led to the introduction of three main types of mechanized vessels, which are described below:

1. Mechanized craft with outboard engines (the most commonly used craft is the 17–23 ft fibre reinforced plastic or FRP boat);
2. One-day Operating Craft (ODOC) with inboard engine (the 3.5 tonne day-boat, 28–34 ft in length);
3. Multi-day Operating Craft with inboard engine and ice compartment (MDOC) (3.5–5.5 tonnes and more than 34 ft in length).

Of the craft mentioned above, the 17–23 ft FRP boat, which was introduced in the early 1970s, operates in coastal waters up to about 15 km from the shore, often along with traditional craft. The outboard motor (OBM) became very popular among

fishworkers, who began to mechanize their traditional craft by fixing outboard motors. Both the 17–23 ft FRP boat and the mechanized traditional craft (MTC) often exploit the same resources, for which they employ small-meshed gill-netting as their most common fishing technique. The 3.5 tonne one-day operating craft (ODOC) is meant to fish in offshore waters, beyond 40 km from the coastline, whereas the multi-day boat (MDOC) operates within and beyond Sri Lanka's exclusive economic zone (EEZ).

3 History of Development of Multi-day Fishing

The ODOC was introduced in the late 1950s and soon became popular due to its ability to exploit fish resources that remained underutilized until then. It operates in offshore waters, employing techniques such as large-meshed gill-netting, longlining, single-hook and multi-hook trolling, and also purse-seining. However, this boat was not equipped with facilities to freeze the fish catch and, therefore, the fishworkers had to confine their fishing activities to one-day fishing trips. By the late 1980s, fishworkers started introducing an ice compartment to the existing fleet of day-boats and, subsequently, this modified boat (which was earlier referred to as 'tank boats' or *tanki boattu*) was replaced by the multi-day boat which was larger in length and equipped with an ice hold and a cabin for the crew (see Figure 1).

Some of these craft operated today are 45–48 ft in length and are powered by 110 hp engines. It is not unusual to find radio communication equipment and satellite navigators in these boats. The MDOC is the craft that is mainly engaged in the exploitation of deep-sea fish resources. Large-meshed gill-netting and longlining are the common techniques of fishing employed by these craft. In the early 1990s, these boats began to venture outside Sri Lanka's EEZ, first to fish in neighbouring Indian, Maldivian and British Indian Ocean territorial waters and then in international waters to the north-east (Bay of Bengal) and northwest (Arabian Sea). The continuing pressure to stay at sea for longer periods and to travel further in search of fish is reflected in the continuing increase in the length of multi-day boats. Local boatyards are now capable of producing boats up to 60 ft in length, which can stay at sea for over two months.

Along with the mechanized craft, the nylon gill-net was introduced into Sri Lankan fisheries,

replacing all traditional hemp and cotton nets. Gill-netting became a popular technique of fishing within a short period of time, and led to a considerable increase in catches. The tenfold increase in fish production from the 1950s until today is the combined result of both the introduction of the nylon net and mechanized craft.

With the exploitation of deep-sea and oceanic fish resources by the multi-day craft, fish landings of the deep-sea and oceanic subsector started to increase at a rapid pace, from 8,155 tonnes in 1989 to 76,500 tonnes in 1999; a more than ninefold increase within a period of 10 years.

4 Types of Multi-day Craft

The multi-day boats in operation today are of several types, varying according to their length and the degree of sophistication. A general model of a multi-day craft is shown in Figure 1. The length of these craft varies from 32 to 55 ft. They are powered by 30 to 120 hp inboard engines. With increasing length of the craft, the size of its fish hold and the capacity of the diesel and water tank and the cabin increase too, enabling the craft to engage in longer fishing trips in more distant waters. Most of the multi-day craft in operation today are 32–34 ft, powered by 50 hp engine. The current tendency is to construct longer and more sophisticated craft of over 40 ft in length, powered by inboard engines of 110 hp.

If one defines small-scale fisheries as “all fishing units, whether traditional or modern, which do not demand heavy capital investment and do not require the intervention of industrial concerns or capitalists outside the fishing communities and where, the owners of these craft are personally involved in decisionmaking in respect of production and marketing”, then the present-day deep-sea craft can also be categorized as small-scale fishing units.

A technical assessment of multi-day boat design and construction practices in Sri Lanka by Oeyvind Gulbrandsen (an FAO consultant and naval architect) (1998)¹ has indicated that the present-day craft has an extreme barge-like shape to maximize fish-holding capacity and fuel space for a given length of the craft, which may have adverse influence on the craft’s stability. This report also indicated that multi-day boats built by one of the major national boatyards did not meet international standards. According to boat managers, this would have added another 40 per cent to the cost of a hull,

putting boats beyond the reach of would-be boatowners. With regard to stability of locally built boats, it has been noted that current procedures for incline tests did not take account of the worst possible scenario—where a boat returns to port with a poor catch, empty fuel and water tanks and wet nets piled on top of the deck. Clearly defined rules and regulations for the construction and testing of multi-day boats are needed, Gulbrandsen concludes. However, it should be noted that incidents of craft toppling over or accidents at sea have not been reported in both the study areas.

The assessment report also indicates that many of the multi-day boats currently operating do not meet recognized international safety standards and are not equipped with onboard safety devices such as life jackets, flares and inflatable rafts.

Another factor of significant importance in terms of the stability of 40+ ft long craft is the inadequacy of the fuel tank to carry sufficient fuel for 3-month long fishing trips, which forces the crew to carry additional fuel barrels on the deck or roof of the cabin of the craft, adversely influencing the craft’s stability. Usually, the two fuel tanks can carry only up to 17,500 l of fuel and, according to fishworkers, approximately another 3,500 l of fuel are required for such long fishing trips. Fuel in these barrels is used first, so as to ensure the craft’s stability during the rest of the trip.

The capacity of the water tank, which holds about 3,500 l of water, also appears to be adequate only for drinking and cooking purposes. Sea water is normally used for washing and bathing, often leading to complaints of skin diseases.

5 Areas of Operation and Duration of Fishing Trips

The main areas of operation of multi-day craft in the Indian Ocean are shown in Figure 2, while the movement of craft and the duration of fishing trips are given in Table 1.

Due to its smaller size and the limited facilities available for longer fishing trips, the 32–34 ft craft operate mainly within Sri Lanka’s EEZ, while all other craft operate both within and beyond Sri Lanka’s EEZ. Fishing trips of the 40+ ft craft are of 2–4 weeks’ duration, while the 40+ ft craft are often engaged in fishing trips exceeding two months. The most popular length categories among the 40+ ft craft are the 45 ft and 48 ft craft. According to skippers of the 40+ ft category in Beruwala and

¹Gulbrandsen O., 1998. *Marine Fisheries Development—Tuna Longliners*, FAO, Bangkok.



Figure 1: A model of a Multi-day craft built by boatyards in Sri Lanka

	Type of craft			
	32-34 ft.	34-36 ft.	36-39 ft.	Over 40 ft.
Area of Operation	Sri Lanka's EEZ	Sri Lanka's EEZ and International Waters	Sri Lanka's EEZ and International Waters	Sri Lanka's EEZ, international waters and the territorial waters of Andaman Islands, Nicobar Islands, Maldiv Islands, Lakshadweep Islands, Australian Islands, Bangladesh, Thailand and Madagascar.
Duration of Fishing Trips	1 week	1 – 3 weeks	1 – 3 weeks	3 weeks to 3 months

Table 1: Area of operation and duration of fishing trips



Figure 2: Common areas of operation of multi-day craft in the Indian Ocean

Dondra of Sri Lanka, the territorial waters of Andaman and Nicobar Islands, Maldives Islands, Lakshadweep Islands and, occasionally, Bangladesh, Thailand, Madagascar and Australian islands are the areas of operation of most of their craft during the period October to April, when the sea is calm. Longlining for shark (for fins) and tuna is the major technique employed. Incidents of these craft fishing in the Red Sea have also been reported. For the western and southern parts of Sri Lanka, during the monsoon period, which falls between the months of May and September, these craft usually fish in the EEZ and in international waters, and the fishing trips are shorter (of three to four weeks in duration). Large-meshed gill-netting is the common fishing technique employed during this time of the year.

Since facilities for freezing are not available on the boats, fish cannot be preserved in the fish hold for a long time. It appears that the maximum holding period is about one month, if fish is to be kept fresh, although fish is kept in the hold for longer periods. At present, the tendency is to look for shark resources, retaining only the fins in the fish hold, while the shark parts are either dried on board or thrown back into the sea.

6 Profitability of Multi-day Fishing

6.1 Cost of craft

6.1.1 Fixed costs

The cost of multi-day craft varies according to the size of the craft, as shown in Table 2. It is evident that the cost of craft increases with its length. In general, the hull, engine and gear (including accessories) account for 38 per cent, 29 per cent and 33 per cent, respectively, of the total cost of the craft.

The main accessories in multi-day craft include radio communication equipment and satellite navigators. Only about 66 per cent of the 32–34 ft craft have radio equipment, while all other craft are equipped with radio communication facilities. Satellite navigation equipment is present in craft above 34 ft in length, and only 88 per cent of the 32–34 ft category carry such equipment. Almost all skippers of 40+ ft craft know how to handle maps and charts and they can read the exact position of their craft.

6.1.2 Variable costs

Variable costs of fishing operations include costs of labour, fuel, food and other inputs. The total cost of operation of different craft varies due to the variations in craft size and the length of fishing trips (see Table 3).

Labour accounts for about half of the total variable costs, followed by fuel (20 per cent). Of the other cost items, the major component is the cost of food on board. The crew workers usually spend lavishly on very expensive food items, because good food is something that they enjoy on their long and lonely journeys in the deep seas.

6.1.3 Revenue and profits

From information collected during field studies, average annual fixed costs, variable costs, gross profits and net profits were calculated for each type of craft, as shown in Table 4.

It is evident that fixed and variable costs generally increased with the length of the craft, which has to be understood in terms of higher prices for larger craft (and therefore, higher fixed costs) and the higher variable costs associated with longer fishing trips of the larger craft, with the exception of the 32–34 ft category. The latter craft, which is engaged mostly in shorter fishing trips within Sri Lanka's EEZ, make more fishing trips per year, which is the reason for their higher average annual variable cost of operation, compared to the 34–36 ft and 36–39 ft craft.

The total revenue amounted to the annual proceeds or the monetary value of all catches landed by a craft. The 40+ ft length category had the highest annual revenue followed by the 32–34 ft, 34–36 ft and the 36–39 ft. The latter category (36–39 ft) enjoyed the lowest annual revenue. It is quite clear that annual revenues did not increase in proportion to the length of the craft.

Gross profits were obtained by deducting all variable costs from total revenue. Variable costs included expenses on food for the crew, fuel, ice and wages. Wages consisted of a share of the total proceeds, which were equal to a half of the total proceeds less operational expenditure. This wage share was divided among all the crew members. A fishing unit is able to continue fishing as long as positive gross profits are earned, which means that, as long as the fishing unit is able to cover all operating expenses, it can stay in business at least in the short term. According to Table 4, all categories of craft enjoyed positive gross profits. Gross profits

Item	Average Cost of Multiday Craft(Rs)*			
	32–34 ft.	34–36 ft.	36–39 ft.	Over 40 ft.
Hull	475,000	650,000	750,000	1,550,000
Engine	400,000	450,000	450,000	1,200,000
Gear & Accessories	425,000	520,000	700,000	1,250,000
All	1,300,000	1,620,000	1,900,000	4,000,000

* 1 US \$ = Rs. 89.00. Source: Field studies in Dondra and Beruwala, 2000.

Table 2: Average cost of multi-day craft

Item	Average Annual Variable Costs(Rs.)			
	32–34 ft.	34–36 ft.	36–39 ft.	Over 40 ft.
Labour	1,300,346	941,466	894,144	1,837,506
Fuel	521,854	455,143	621,450	720,652
Other Inputs*	809,734	816,928	674,623	923,752
Total Variable Costs	2,631,933	2,213,537	2,190,217	3,481,910

* includes food, water, ice, maintenance, license fees, handling charges, payments for watchers at anchorage, cost of cleaning unloading and loading, gate charges, etc.

Table 3: Average annual variable costs of craft operations of multi-day craft

Type of Craft	Fixed Cost (1)	Variable Cost (2)	Total Costs (3) = (1) + (2)	Revenue (4)	Gross Profit (4) - (2)	Net Profit (4) - (3)	Resource Rents* (5)
32–34 ft	196,500	2,631,933	2,828,433	3,810,562	1,178,629	982,129	911,742
34–36 ft	235,879	2,213,537	2,449,416	2,965,715	752,178	516,299	447,299
36–39 ft	230,487	2,190,217	2,420,704	2,909,800	719,583	489,096	415,896
Over 40 ft	495,422	3,481,910	3,977,332	6,308,696	2,826,786	2,331,364	2,254,364

(5)* Net Profits - Opportunity Cost of Management. Source: Field studies, Dondra and Beruwala of Sri Lanka, 2000.

Table 4: Average annual costs and revenues associated with Multi-day Craft Operations (Rs)

were largest for the 40+ ft craft category and lowest for the 36–39 ft category. The gross profits of the former craft were approximately twice those of the 34–36 ft and 36–39 ft categories.

Unless all fixed costs are covered, a fishing unit would not be viable in the long run, because the fishing activities will have to be terminated when the productive life of the current assets expires. Therefore, allowances should be made for depreciation and other fixed costs, which ensure continuity of the fishing unit in the long term. Net profit is the difference between total revenue and total costs (variable costs + fixed costs). So those fishing units enjoying positive net profits are viable in the long term. As can be seen from Table 4, all categories of craft enjoyed positive net profits, indicating their long-term viability.

Resource rents were positive for all craft types. Rents were low for the 34–39 ft length categories, compared to the 32–34 ft and 40+ ft categories, which registered higher resource rents. These results have important implications for future planning and policy making in respect of deep-sea fishing. First, fishing within Sri Lanka's EEZ still generates substantial resource rents, and the 32–34 ft craft that operate in this area appear to be most suitable for this purpose. Second, operations of 34–36 ft and 36–39 ft categories, both within and just beyond the EEZ, appear to be too costly, compared to resource availability in their areas of operation. Third, the extremely high resource rents earned by the 40+ ft category can be attributed to its ability to reach distant fishing grounds rich in high-valued fish resources, especially shark and tuna.

Return to capital was arrived at by deducting the opportunity cost of management from net profits; a normal wage share of a crew member was taken as the opportunity cost of management. The result was then expressed as a percentage of the total value of assets (Table 5).

It is evident that the rate of return to capital was quite high for the 32–34 ft and 40+ ft categories, compared to the 34–39 ft category. Rates of return to capital for these craft are significantly higher than the current rate of interest on fisheries credit (which, at present, remains around 21 per cent), while return to capital for the 34–39 ft craft categories appears to be marginal.

Return to labour, expressed as the return per 8-hour man-day, was quite high for the 40+ ft category, followed by the 32–34 ft, 34–36 ft and 36–39 ft categories (Table 6).

These results were then compared with wage rates prevailing in other occupations (Table 7).

It is evident that fishermen who had adopted multi-day fishing earned considerably higher incomes, compared to incomes earned by skilled and semi-skilled workers engaged in other employment activities in the unorganized sector.

7 Profitability of Multi-day Fishing with Restricted Movement of Craft

The higher profitability of fishing operations of the multi-day craft, especially the 40+ ft category, appears to be closely associated with the larger craft's ability to move into distant fishing grounds rich in shark resources. According to fishermen, such rich resources are mainly found in the territorial waters of the Andaman and Nicobar Islands and Maldivian Islands. If measures are adopted by these nations to effectively stop illegal fishing by foreign fishing vessels, then Sri Lankan fishermen will not be able to earn as high revenues as indicated in Table 4. Field studies revealed that annual revenues would drop to about half of what these craft could earn during the non-monsoon period, if access to these resources are completely cut off. This is especially true with the 40+ ft category of craft. If this is the case, the net revenues earned by the 40+ ft category would fall to about Rs1,786,684 and return to capital invested would drop to 40 per cent. It is evident that these multi-day craft would still earn substantial net profits and return on investment. Yet, more in-depth studies are required to arrive at any concrete conclusions on this issue.

In responding to a question on their suggestions to improve fishing techniques in international waters, the skippers of multi-day boats said that fishing in international waters would become highly profitable if they can use the very long nylon longlines used by Thai fishing vessels in the deep seas. These longlines are supposed to be over 40 km in length, compared to the 12-km longlines used by the local fishermen. Equipment to trace these very longlines and a winch to haul them in were suggested by the local fishermen as a means of improving the present multi-day fish-catching technology.

8 Social implications

The social implications of multi-day fishing are discussed here in relation to the changes that have taken place in the labour and product markets. The major emphasis will be on changes that have taken place in production relations between various agents and the role of women.

Type of Craft	Value of assets (1)	Net profits-opportunity cost of management (2)	Return to Capital (per cent) (2)/(1)*100
32-34 ft.	1,130,000	911,742	80.69
34-36 ft.	1,620,000	447,299	24.61
36-39 ft.	1,900,000	415,896	21.89
Over 40 ft.	4,000,000	2,254,364	56.36

Table 5: Return to capital in multi-day fishing (Dondra and Beruwala, 2000)

Type of Craft	Return to Labour (per 8-hour man-day*)(Rs.)
32-34 ft.	693
34-36 ft.	502
36-39 ft.	476
Over 40 ft.	875

* man-day = 8 hours of fishing labour

Table 6: Return to labour in multi-day fishing (Dondra and Beruwala, 2000)

Sector	Activity	Average Daily Wage Rate(Rs.)
Agriculture	Ploughing (paddy)	227.00
	Transplanting (paddy)	221.00
	Harvesting (paddy)	217.00
	Land-prep.(tea)	206.00
	Tapping (rubber)	129.00
	Planting (rubber)	239.00
	Digging Pits (coconut)	253.00
	Plucking (coconut)	359.00
Building Construction	Master Carpenter	367.00
	Master Mason	364.00
	Unskilled Helper	219.00
	Skilled Helper	275.00

Source: Central Bank of Sri Lanka (2001) Annual Report 2000, Colombo, Sri Lanka.

Table 7: Average daily wage rates in agriculture and building construction

8.1 *Emerging relations between employers and employees*

8.1.1 *Unequal access to credit and the new entrants to fisheries*

Of all categories of craft owners, those engaged in traditional fishing activities have the least access to credit facilities extended by State-owned banks. In general, formal lending schemes appear to have a high bias towards asset-rich individuals. Granted that access to new technology is directly related to fishworkers' access to credit, the asset-poor fishworkers in fishing societies are put at a serious disadvantage in adopting new technology due to their inability to offer the collateral demanded by lenders. Although the fisheries co-operatives offered them opportunities of adopting the new technology, the issue of craft through co-operatives under the State subsidy schemes is on the decline. About 75 per cent of the owners of multi-day craft today are non-fisher owners, of whom a sizeable number represent a class of businessmen who have no history of fishing. The shift of craft owners from traditional to the ultra-modern sector, therefore, appears to be quite low.

With the entrants of 'outsiders' into fishing communities to undertake multi-day fishing, the traditional pattern of labour recruitment, employer-employee relations and work conditions of labour have undergone tremendous changes

8.1.2 *The disappearance of traditional skilled labour groups*

In traditional fisheries, two distinct types of labour were present; the *marakkalahe* group (skippers) and the labourers. This difference was more pronounced in the traditional skipjack fishery. The more experienced fishworkers carried out the functions of active fishing (using pole-and-line), while the less experienced crew labourers, called *kalasikarayo* (students), threw bait into the sea and splashed the water with their hands. The most experienced fishworker in the crew was the maha *marakkalahe* (chief skipper), who usually commanded the craft, gave orders and directed all operations. With the advent of the new deep-sea technology, many of the functions performed by the *marakkalahe* have been taken over by modern equip-

ment. Today, most of the crew members of multi-day craft claim that they are able to manoeuvre fishing craft and work with the modern equipment. Although every modern craft has a boat captain, he enjoys that position not because of the special fishing skills he possesses but for his experience in fishing and his organizational and managerial abilities. Usually, these boat captains do not receive any additional payment for their services, but instances where he is paid an allowance up to 5 per cent of the owner-share have been noted². The fact that this payment is made from the owner-share (not from the general wage-share) reveals that fishing labour has now become a more 'generalized type of labour'. This has facilitated even seasonally unemployed agricultural labour to join fishing crews, as it was evident in Tangalle of South Sri Lanka³.

8.1.3 *The emergence of the labour market in fisheries*

The relations between owners of fishing assets and crew labourers in traditional fishing communities during the pre-war period were characterized by a patron-client type of relations. These relationships were well evident in beach-seine fisheries⁴. Risk of falling into crises of subsistence, on the part of crew workers, and the various incentive problems associated with labour markets were found to be the major forces that led to the formation of such relations. Long-term labour attachment was quite common, which is a dominant feature of the patron-client type of relations. Moreover, strong kinship links between craft owners and crew workers have also been often observed. Near-perfect knowledge of one's own kin and the affective relations among them ensured the craft owners with a dependable and guaranteed labour supply, while this system of labour recruitment also guaranteed employment security to the crew workers.

The employer-employee relations have undergone many-faceted changes along with market expansion, population growth and the advent of new technology. The crew labourers are no longer employed on a 'permanent' or 'long-term' basis and they are free to move from one employer to another at any time they wish, even during the peak season. Even indebtedness to a craft owner does not prevent a crew labourer from leaving him. The new owner may advance money to settle debts

²Ibid.; Creech S. & W. Subasinghe, 1999. *The Labour Conditions of Sri Lanka's Deep-sea Workers* (research report prepared for United Fishermen's and Fishworker's Congress).

³Amarasinghe, O., 1988. *The Impact of Market Penetration, Technological Change, and State Intervention on Production Relations in Maritime Fishworkers' Communities: A Case Study of Southern Sri Lanka* (unpublished Ph.D. thesis), FUNDP, Namur, Belgium.

⁴Amarasinghe, 1988. op.cit.

or the labourer may settle debts later as he earns. Apparently, a genuine labour market has emerged in which anonymous relations tend to prevail, the forces of supply and demand are at work and labour mobility is no more hindered by customary practices of personal attachment. The fact that labour has now become a commodity also means that the craft owners have an interest in extracting as much surplus as possible from labour.

8.1.4 Changes in the method of catch sharing

As in many other fisheries of the world, labour in Sri Lankan deep-sea fisheries is paid a share of the catch. The system of catch-sharing helps the craft owners pool the risk of loss of operational capital expenditure when fishing is poor. If the catch is zero, the owner does not lose the operational capital expenditure because it is deducted from the proceeds of the following fishing trip, before the proceeds are distributed.

In the system of catch-sharing in multi-day craft, operational capital expenditure on the fishing trip is deducted first from the trip's total proceeds and the rest is then divided between the owner (payment for capital) and the crew workers (payment for labour). In general, it is evident that the owner's share is higher for mechanized craft than for traditional craft due to the high degree of capital intensity of these craft. In a very broad sense, capital and labour receive equal shares in mechanized fishing, whereas, in traditional fishing, the respective shares are one-third and two-third.

Quite recently, with the use of large multi-day boats (more than 50 ft in length) for deep-sea fishing, some craft owners have adopted a method of paying wages to crew workers. Although wage contracts are likely to be more attractive to crew workers under the condition of highly fluctuating catches threatening their subsistence, they may prefer share contracts in highly productive deep-sea fishing, in which the catches are high and subject to low fluctuations. Wage contracts under such conditions would prevent the crew workers benefiting from large catches, but would enable the craft owners to increase their share of the value of the catch. Although fishworkers generally object to this practice, whether they will be in a position to effectively bargain with craft owners will depend on the strength of their bargaining position as a group.

Disputes between craft owners and crew workers are quite common, and they usually arise at

the time of distribution of proceeds. Such disputes are confined to an exchange of a few harsh words and/or the crew worker leaving the craft owner. Quite recently, conflicts between owners of multi-day craft and their crew workers emerged when the former category tried to replace the old catch-sharing system (50:50) by a new system in which the owner's share was increased (60:40). Loss of employment was reported by a number of fishworkers in Dondra, who tried to organize fellow fishworkers against this move. This matter still remains unsettled and the Ministry of Fisheries and Aquatic Resources Development (MFARD) intends introducing rules and regulations governing the distribution of proceeds in multi-day craft, and requests have been made to the MFARD by fishworker organizations recommending a 50:50 sharing system. Although the new catch-sharing method is considered by fishworkers as 'exploitative', it still remains to be seen whether the craft owners receive sufficient returns on capital with the 50:50 catch sharing system. In fact, a study conducted by Amarasinghe (1989)⁵ revealed that labour is overpaid and capital is underpaid in mechanized fishing.

8.2 Weak bargaining position of crew workers and poor work conditions on board

The weak bargaining position of crew workers is quite evident in respect of the facilities available for labour in multi-day craft. Life jackets are generally not available on multi-day craft, while adequate medical supplies and clean water are not carried on board. Risks to life and health appear to remain quite high, although crew workers do not complain much about them.

The major safety issue at present is that of the threat of capture, arrest or conflict at sea. Almost every month, five to ten Sri Lankan deep-sea fishing boats are arrested and detained for alleged illegal fishing. Fishworkers are detained for periods ranging from four weeks to over 12 months, depending on the charges levied against the boat, by the authorities. When asked why they tend to fish in foreign waters, skippers came out with two reasons.

First, Sri Lankan authorities turn a blind eye to foreign craft fishing within Sri Lanka's EEZ. Many large Thai fishing boats are said to operate within Sri Lanka's territorial waters and, due to

⁵ Amarasinghe, O., 1989. Technological Change, Transformation of Risks and Patronage Relations in a Fishing Community of South Sri Lanka. *Development and Change*, Vol. 20, No. 4, pp 684-734.

their larger size and power, they appear to harass the local fishworkers by cutting their nets and purposely knocking off the smaller local craft. Therefore, the local fishworkers feel safe in international waters where there is less probability of such confrontations.

Second, the risk of arrest for fishing in other territorial waters appears to be low, although several incidents of arrest have been reported. It appears that the crew, aiming at high average incomes from multi-day fishing, willingly accept to bear the risks of arrest, illness and even death. Information obtained from the monitoring, control and surveillance (MCS) division of MFARD revealed that foreign vessels are only issued licences to land and refuel, but not to fish inside Sri Lanka's EEZ. On their part, the Sri Lankan authorities are unable to carry out effective MCS activities with the currently available small craft due to their low speeds and also due to their inability to carry weapons on board following the ban on the use of such weapons by defence authorities, under the current status of war against the Tamil militant group, the Liberation Tigers of Tamil Eelam.

Fisheries insurance, as in the provision of any other forms of insurance, is adversely affected by the problems of 'moral hazard' and 'adverse selection'. Perhaps these problems are felt more due to the great geographical distance that exists between insurers and insured. Although a large number of craft owners contribute to formal insurance schemes during the purchase of multi-day craft, many of them withdraw from them after the initial premiums are paid. Studies carried out in a number of fishing villages in the South of Sri Lanka revealed that indemnity payments received by craft owners from formal agencies accounted for less than 30 per cent of the total repair and replacement expenses incurred on the affected fishing assets (the rest being secured through credit). Long delays in indemnity payments and high premiums were the major complaints made by fishworkers against State insurance agencies. The imperfections in the insurance market and the withdrawal of craft owners from the existing schemes increase the risk of life to fishworkers, unless they are covered by any personal insurance scheme. The need for the latter is urgently felt in deep-sea fisheries.

9 Emerging Relations Between Agents in the Product Market

9.1 *The disappearance of 'boat-tying'*

Generally, fish merchants (*mudalali*) are eager to secure access to a large and guaranteed supply of fish, which leads to stiff competition among them for a higher 'market share'. One obvious way to ensure this is to buy their supplies forward. In the absence of any organized forward market for fish, one way of forward contracting is to link up credit with marketing relations by providing loans to craft owners on the latter's promise to hand over all future fish catches. Credit provided by *mudalali* helps craft owners to insure against the various risks and uncertainties confronted by them or to finance expenditures. In its simplest meaning, a tied-boat owner is one who has pledged to dispose all his future catches through a *mudalali* for loans borrowed from him. For craft owners, the credit provided by fish merchants perform both a credit and an insurance function, under the condition of imperfectly developed credit and insurance markets.

Fishworkers claim that *mudalali* often resort to underreporting of wholesale prices. Although not explicitly stated, it is quite evident that the difference between the wholesale price (reported by the *mudalali*) and the price paid to the producer is made up of a marketing commission and an interest charge on loans granted to the producer.

Direct handing over of catches to lender-merchants was the most dominant mode of catch disposal for fish landings of large craft in many fishing villages in the 1970s and the first half of the 1980s. Most of the *mudalali* involved in 'boat-tying' arrangements were the local fish merchants. However, recent studies in the southern coastal communities (Amarasinghe, et al., 2001) reveal that the fish auctioning system is gaining popularity among owners of large mechanized craft. Today, more than 50 per cent of the landings of large mechanized craft are auctioned. The question arises as to what has led to the above changes in the fish marketing system. One of the major factors responsible for this change is the introduction of multi-day fishing.

The movements of MDOCs, which often fish in international waters, are uncertain, giving rise to problems in marketing the catches. When an MDOC lands its catch, there is no assurance of sufficient numbers on the beach to bid for their catches. This prompted many craft owners to vertically integrate their production activities with marketing activi-

ties, by acquiring insulated fish vans and transporting their catches to commission agents in large urban centres. This was facilitated to a significant extent by the increased availability of institutional credit for investments in fish marketing. This helped the craft owners to cut down marketing costs (saving on 'unfair' charges levied by assemblers) and narrowing the informational gap (because they had perfect information about the market situation) which enabled them to obtain better prices for their fish. Moreover, they were often requested by fishworkers operating other smaller craft to undertake transportation of their catches too, which again weakened the role of the assembling agent.

New tying arrangements between owners of MDOCs and commission agents in large urban markets have emerged recently. Commission agents, especially those operating in Colombo, have granted credit to large numbers of craft owners to acquire deep-sea craft. As for craft owners, they find the present tying arrangements 'less exploitative' than those with beach assemblers for several reasons. Since craft owners are directly related to the wholesale market, *mudalali* cannot underreport prices. Increasing the market commission is also a limited prospect because craft owners, who are equipped with fish transport vehicles, are highly mobile and, therefore, they are able to move to alternative commission agents (operating in other markets), or they may approach wholesalers directly. Very few modes of sanction are available to commission agents to take action against craft owners who resort to such moves. On the part of the lender-commission agent, he has no interest in extracting his returns to a level that would harm his relations with the borrower because it would increase moral hazard problems. These problems are likely to be greater due to the wide geographical distance that exists between agents.

9.2 *Changes in the role of women*

Active participation of women in fishing can only be observed in the Catholic fishing communities in the western province of Sri Lanka. Although women's participation in active fishing was quite low, their contribution to marketing, from auctioning to retail selling of fish, remained at a very high level in such communities. Most of the women used to gather on the beach at dawn, awaiting the return of the craft with their catches. The piercing voices of women shouting to market their takes

were heard on the beach, above the voices of the male fishworkers. However, women's participation in the deep-sea fisheries subsector remains very low, due to the fact that the movements of these craft are uncertain and that catches are usually sent to large urban centres in insulated fish vans of the craft owner. Local marketing of catches is hardly practised.

However, women claim that they play an increasingly important role along with the pace of development of the fisheries sector. The increasing rate of personal savings noticed in fishworker families can be partly attributed to the increasing involvement of women in financial management. Household responsibilities of women are growing along with the development of the ultramodern deep-sea fisheries subsector in which the fishing trips are longer, usually for about one-and-a-half months. Not only do the women have to feed, educate and protect children and manage their households, but they are also supposed to confront and resolve all health and other household problems as well as meet social obligations. Women claim that they are the ones who maintain all social relations with kin, friends and other individuals and groups, because the men (who are absent from home for prolonged periods) hardly find time to do so. Instances of wives of young fishworkers having love affairs with other men in the community, when their husbands are absent from home for long periods, are also not rare.

It is thus evident that crew men in the deep-sea fisheries subsector earn higher average incomes, at a greater social cost than those who operate in the coastal and offshore waters, a cost that is mainly borne by the female fishworkers in the community.

10 Conclusions

The introduction of multi-day craft into Sri Lankan fisheries has led to a considerable increase in fish production in the deep-sea fisheries subsector. These craft are of varying length and there exists a tendency to build longer fishing craft capable of engaging in fishing trips of more than two months in duration. However, the ability of the present large multi-day craft of 40+ ft in length to engage in such long fishing trips is constrained by the inadequate capacity of the fuel and water tanks built into these craft, which force the crew workers to carry additional fuel on board, adversely affecting the stability of the craft. Technical reports of experts have

also proposed an improvement of the design of the multi-day craft to increase their stability.

Of the different length categories, the 32–34 ft craft operates mainly within Sri Lanka's EEZ, while the 34–36 ft and 36–39 ft categories operate both in the EEZ and in international waters. The 40+ ft craft operate throughout the Indian Ocean, especially around Maldivian Islands, Andaman and Nicobar Islands, Lakshadweep Islands and, occasionally, in West Australian islands, the territorial waters of Bangladesh, Thailand, Madagascar and even in the Red Sea. Fishing inside the EEZs of other countries is purposive and is also common. The potential financial gains from exploiting such resources appear to be significantly high, which has dampened the costs associated with the risk of arrest for intruding into others' territories.

Profitability estimates indicate that all types of multi-day craft earn positive gross and net profits, indicating both their short-term and long-term viability. Net profits are highest for the 40+ ft category, followed by the 32–34 ft, 34–36 ft and 36–39 ft categories. Resource rents are positive for all types of craft, indicating that all these craft operate in areas where rates of resource exploitation have not reached the open-access equilibrium. Return to capital for 32–34 ft and 40+ ft craft categories are significantly higher than the current rate of interest on fisheries credit. The rates of return to capital for craft of 34–39 ft are quite low. Return to labour is highest for the 40+ ft category, followed by the 32–34 ft, 34–36 ft and 36–39 ft categories. Crew workers engaged in all types of multi-day craft earn incomes above those earned by skilled and semi-skilled labour in the unorganized sector, showing the attractiveness of employment opportunities in multi-day craft, in relation to comparable employment opportunities elsewhere.

Results reveal that profits, return to capital and return to labour do not increase in proportion to the length (and therefore, size) of the craft. It is quite evident that the 32–34 ft craft is best suited to fish within the Sri Lanka's EEZ. The 34–39 ft craft categories are not capable of engaging in long fishing trips and harvesting rich fish resources in distant waters. Yet the fishworkers incur high fixed and variable costs, earning lower profits compared to those associated with the smaller 32–34 ft craft. In fact, the 34–36 ft and the 36–39 ft craft are not any more popular among the fishworkers, and their relative numbers are likely to decline in the future. The best craft for fishing in the Indian Ocean appears to be the 40+ ft craft, of which the 45 ft and 48 ft craft are gaining popularity among fishwork-

ers in Sri Lanka. However, if effective measures are adopted by nations in the Indian Ocean Region to ban illegal entry of foreign fishing vessels into their territorial waters, the revenues earned by the 40+ ft craft will be adversely affected. Nevertheless, it appears that, even after such a move, these craft would still earn attractive revenues and return to capital invested.

Several social changes are evident, which have considerable impacts on the labour and product markets. Access to credit closely follows access to new deep-sea technology. A large number of 'outside' businessmen with privileged access to credit and who do not have close ties with the local communities of fishworkers have entered the deep-sea subsector. A genuine labour market is emerging in the deep-sea fisheries subsector characterized by a high degree of personal anonymity among agents and a high degree of mobility of labour. The new employer-employee relations are devoid of affective ties, and labour is recruited less along kinship or friendship lines. In the efforts of craft owners to extract large surpluses from fishing activities, there is a move to change the former catch-sharing system in favour of craft owners, while instances of paying wages to the crew men have also been reported. Work conditions of labour too have deteriorated.

Crew workers in multi-day craft often face the risk of arrest, for fishing in the territorial waters of other countries. Even at present, a large number of Sri Lankan fishermen are detained by other nations for illegal fishing. No acceptable solution has yet been arrived to resolve this issue. However, it appears that crew workers aiming at high average incomes from multi-day fishing willingly accept to bear the risks of arrest, illness and even death.

Introduction of multi-day fishing has also led to significant changes in the sphere of marketing. Craft owners have integrated their 'production activities' with marketing activities, thereby undermining the role of the local fish assembler (*mudalali*). Fish workers are rarely 'tied' to *mudalali* today, for borrowing from them. Although credit-product market interlinkages are found among owners of multi-day craft and commission agents in large urban wholesale markets, such relationships are considered by fishworkers as 'less exploitative'. There is near-perfect information about market conditions and a craft owner is able to move from one commission agent to another, until a reasonable price is received for his catch.

The role of women in fisheries has also undergone significant changes, along with the introduc-

tion of multi-day fishing. When their husbands are away from home, on month-long fishing trips, the wives are burdened with an array of household responsibilities earlier borne by the men. Apparently, crew men in the deep-sea fisheries subsector earn

higher average incomes, at a greater social cost than those who operate in the coastal and offshore waters, a cost that is mainly borne by the female fishworkers in the community.



Transborder Issues Involving Fishworkers and Fishing Vessels: Arrangements for Resolving Conflicts

REPORT: WORKING GROUP I

1 Indonesia

Ronald Titahelu from Indonesia spoke about the Filipino fish aggregating devices (FADs) in the Indonesian waters of Sulawesi, and complained that the traditional fishing rights of small-scale fishers are slowly being taken away from them. The Indonesian Navy does not give adequate protection from foreign fishing vessels in Sulawesi, he added. He also said that many Indonesian fishers have lost access to their traditional fishing grounds due to the demarcation of an Australian fishing zone.

2 India and Sri Lanka

Discussing the Indo-Sri Lankan border issues, Arulanandam from India said there were two agreements, in 1974 and 1976, between India and Sri Lanka, which also covered fisheries issues. Fishing was smoothly conducted until the Vellikadai prison incident in Sri Lanka in 1983, he said. Innocent Indian fishers have since been shot at. Only in the case of Sri Lanka and India does this happen, and not when Pakistanis fish in Indian waters or when Indians fish in Pakistani waters, he said. How can boundaries be fixed in water and how can fishermen accept them, he asked.

One can cross the border for several reasons, Arulanandam continued. It could be due to engine failure. In early 2001, 11 boats with 50 fishermen were arrested by the Sri Lankan Navy, he said. One of the fishermen who had a stomach problem had to be taken to a hospital. While being transferred at sea, he fell overboard and drowned. Arulanandam said there were 16 fishermen in Mannar jail in Sri Lanka, and four of their boats were also confiscated. Thanks to legal and other forms of assistance from a number of friends in Sri Lanka, the arrested fishermen eventually get released. He particularly mentioned the role played by the Alliance for the Release of Innocent Fishermen (ARIF). Arulanandam narrated some of the incidents in the form of a song, which talked about the Tamil fishermen and

their struggles against the waves, and their struggle to live.

Talking about the arrest of Sri Lankan fishers in Indian waters, Herman Kumara from Sri Lanka said there were several difficulties for the families of such arrested fishermen. He attributed Sri Lankan illegal fishing to pressures from the mudalalis (boatowners) who force fishworkers to go far out to sea, to bring as much fish as they can. The onboard fishermen are actually fishworkers, who try to earn an income in the form of a share of the catch. Fishermen do not care about boundaries, he said. They go to waters of Bangladesh, Somalia, Seychelles, India, Myanmar and Thailand.

In 1999 alone, 150 fishermen were arrested in Indian waters. There are fishermen in the jails of Kerala, Tamil Nadu and Andamans. The fishermen and their boats eventually get released, thanks to organizations like the South Indian Federation of Fishermen Societies (SIFFS), ARIF and the World Forum of Fisher People (WFFP). It takes a minimum of six months for the release of fishers and boats. The release of fishermen involves the State and the Union governments. Kumara said the fishermen, who sometimes get mentally and physically exhausted, should be treated as human beings. When news of their arrest reaches their families, women and children get affected too. Families get economically encumbered, while the children drop out of school.

According to the 1982 United Nations Convention on the Law of the Seas (UNCLOS), which makes provisions for innocent passage, the captured crew should be repatriated as soon as they are arrested, Kumara added. But, in reality, the fishers are kept for long periods in prison. Government provides assistance for six months. There should be a system to inform the families immediately, he said. During accidents, the boatowners communicate directly with lawyers, and not with the fishermen. Kumara wondered whether Sri Lankan fishermen could provide legal assistance to those who get arrested. Non-governmental organizations (NGOs)

should have better co-ordination to get the fishermen released as soon as possible. Why cannot the governments in South Asia enter a multilateral arrangement for sharing the fisheries resources, he asked. At least Sri Lanka and India ought to have a bilateral arrangement, he said, with a mechanism to address transborder issues. Sri Lankans, however, should not be exporting their excess fishing capacity to other countries, he concluded.

The fishermen illegally fishing in the Sri Lankan waters are all from Tamil Nadu, said V. Vivekanandan from India. About 75 per cent are from Rameswaram. Most of the vessels are mechanized, while some are motorized traditional canoes. There are a few unmechanized vessels too, he said.

Historically, the fishermen on both sides of the international border line (IBL) are Tamil-speaking. They fish nine months on the Indian side and three, on the Sri Lankan side. There was a time when fishermen from Sri Lanka would visit India to watch Tamil films, he joked. The Kachhathivu dispute dates back to 1920, he said. Ecclesiastically, the island was under the Jaffna Bishop in Sri Lanka, but, politically, it belonged to the Raja of Ramnad.

There was an Agreement for the Bay of Bengal and Gulf of Mannar in 1971, Vivekanandan said. In exchange for seceding Kachhathivu to Sri Lanka, the Sri Lankan government agreed to grant citizenship to the Indians who were living there. Fishermen, however, were not consulted on the boundary issues, he said.

Until the civil war in Sri Lanka in 1983 things went smooth, he continued. Since then, until 2001, there were 175 incidents of shooting and killing. In the meantime, Indian fishermen have expanded their trawler fleet. The arrest of fishermen started in November 1996. Since 1998, the number of shootings has, however, declined.

The traditional and trawler fishermen alternate in fishing operations in Rameshwaram. Every alternate day, about 500 mechanized trawlers cross over into Sri Lankan waters. The Sri Lanka Navy has difficulty in distinguishing between genuine fishermen and others. According to the Sri Lankan Navy it was safer to shoot first than to verify the identities of the crew. Arrests are rarely made for poaching in the Sri Lankan waters, but, once caught, the fishermen are charged.

Most of the arrests of Sri Lankan fishermen are made in the Gulf of Mannar or the Arabian Sea, Vivekanandan said. The Sri Lankan fleet has expanded and it has also increased the overall length of its fishing vessels. While Indians trawl for shrimp on the Sri Lankan side, the Sri Lankans fish

around islands, he said. Both governments have supported the expansion of fishing fleets. For example, there is a 50 per cent capital subsidy scheme for building the Sri Lankan multi-day boats, he said.

While there are instances of the Sri Lankan Navy sending back some of the Indian vessels fishing in their waters, there are no such cases involving Sri Lankan vessels on the Indian side, he said. Fishers and their boats are exchanged at Anuradhapura. The period of detention before such an exchange takes place could range from a few days to six months. There are seven designated courts in India to try violations of the Maritime Zones of India Act, he said. Fishermen have to be produced in court every 15 days. The State and Centre then start a long process of exchanging letters. Three ministries are involved in the arrest of fishermen. The cases are normally withdrawn, but the process can take a minimum of one year. Until 1999, there was no prosecution of fishermen. Since then, the skippers are being prosecuted. A fine of Rs100,000 or six months in prison could be the maximum punishment. The fine has now been reduced to Rs5,000.

Vivekanandan thinks that a bilateral fishing agreement would be the best solution for the India-Sri Lanka fishing conflicts. Five options could be considered under such an agreement:

Option I is to allow free access to fishermen from across the border in each others' waters. This is the position of the National Fishworkers Forum (NFF) and the WFFP, he said. There are no animosities between the Indian and the Sri Lankan fishermen, he added. While the fishermen operating the dugout canoes might burn trawlers in protest, they have never protested against the Sri Lankan multi-day fishing boats.

Option II is to expeditiously settle the cases of illegal fishing; the vessels and the fishermen should be allowed to return as quickly as possible, say, within a fortnight.

Option III would be to punish the poachers. The poaching vessels and the fishermen should be released within 10 days. The skipper may be charged and, if he pleads guilty, reasonable fines, say, Rs20,000–50,000 should be imposed. If a vessel is apprehended a third time, it may be confiscated. This would be a humane and transparent way of dealing with poaching. The flip side of such an approach is that it would not have a deterrent effect.

Option IV to reciprocally licence fishing vessels from both sides to fish in each other's designated waters. For example, 500 boats from India could be given access to the Sri Lankan waters in the Palk Strait and an equal number of Sri Lankan vessels could be given access to the Arabian Sea by India, subject to the availability of fishery resources.

Option V would be to manage Palk Bay, Bay of Bengal and Arabian Sea separately and to manage Palk Strait jointly by India and Sri Lanka.

3 Pakistan

Muhammad Ali Shah from Pakistan said that both his father and grandfather were arrested by the Indian authorities for fishing in the Indian waters. The marine fishermen of Pakistan come from Baluchistan and Sind, he said. Sind has about 17 major creeks, and one of them, the Sir Creek, is the border with India. Relations between Indian and Pakistani fishermen from Karachi are very old. Before the Indo-Pakistan wars of 1965 and 1971, the Kachchh authorities gave permission to Pakistani fishermen to fish in waters off Kachchh, India, he said. After the 1971 war, his grandfather, however, was detained, along with many others, for fishing in the Indian waters. They were subsequently released and they had to return to Pakistan on foot. Some fishermen who were thus released lost their way and died in the desert. Although his grandfather managed to return home, while entering Pakistan, he was detained once again, this time by Pakistani authorities.

The first exchange of fishermen between the two countries was in 1988, said Shah. The Pakistanis were released after four months of detention. The second exchange was in 1995. Shah said many Indian fishermen cross over to the Pakistani waters to target many species. The crossing over into the Indian side is often unintentional, he said. The currents are very fast in Sir Creek. Even if you are anchored in Sir Creek, if it rains heavily, you could find yourself in Indian waters. During fishing operations, the fishermen do not really realize that they have crossed over, said Shah. The maritime boundary between India and Pakistan in Sir Creek is still disputed, he said. Sometimes, the Pakistani Coastguard arrests Pakistani fishermen, thinking that they are Indian fishermen.

In October 1999, the Indian Coastguard fired at Pakistani fishermen fishing in Kajor Creek. They tried to escape. Two fishermen got killed. In 2000,

the Indian Coastguard fired at a Pakistani fishing vessel, and one fisherman was injured. Fishermen have no conflicts with one another, he said. Many Indian fishermen come to fish on the Karachi coast. They help each other, he said. A trawl gear sold in India (costing Rs10,000 in Gujarat) is one-fifth its price in Pakistan (Rs50,000). The Gujarat fishermen sell gear and sometimes even give it free to their Karachi counterparts. The conflict is only between the two governments, and not between fishing communities. Fishing communities, he said, are the victims of the conflicts between India and Pakistan. Pakistanis have never complained against Indian fishermen, he said. Nor have the Indian fishermen ever complained against Pakistani fishers. There are no visible boundary walls at sea, he said, adding that in Pakistan they do not see an end to the problem since both governments are not showing any interest in solving it. In the meantime, the exchange of fishermen will go on, he said. He said that the Pakistani fishermen welcome Indian fishermen and he pleaded that no fishermen should be arrested.

Crossing an imaginary line has triggered a great human tragedy, said Souparna Lahiri from India. In some Tamil Nadu fishing villages in the Palk Strait, there are only widows. Although eligible for Rs50,000–75,000 as compensation from the government, many of the deaths of their husbands went uncompensated since no certificate could be produced to establish death. There are about 200 Pakistani fishers in Indian jails even today, Lahiri said. Fishers are treated like prisoners of war (POWs). Since 1987, there have been around 8,000 arrests of Indian and Pakistani fishermen for crossing the IBL.

Fishermen are mainly arrested in the Indus delta area, believed to be the richest fishing ground in South Asia, he said, adding that it is essentially a dispute over a non-conflictual issue. The fishermen often count the voyage time as a thumb rule to estimate distance.

The fishermen are charged under the Foreigners Act and the Passport Act. If caught outside the territorial sea, they cannot be charged under the Passport Act. The arrested fishermen are often kept alongside hardened criminals in Landi Jail, Karachi. There are lawyers in Porbandar who are on the payroll of Karachi boatowners to fight legal battles, Lahiri observed. Attention was also drawn to the arrest of an Indian fishing vessel arrested by Iran with the permission of Saudi authorities and handed over to Pakistan. The crew, comprising Tamils, had to spend two years in a Balochistan jail.

It was proposed that the current practice of classifying fishing boats as cargo boats should be changed. It was further proposed that the governments should respond to the organizations making the representation on behalf of fishermen and their families. The exchange of fishermen, it was observed, was a very cumbersome and time-consuming process.

4 Seychelles

In his presentation on illegal fishing in the southern Indian Ocean, Joseph Randolph Payet of the Seychelles Fishing Authority said that the most difficult problem for the Authority after the arrest of illegal fishermen is what to do with them. Rather than focusing on what governments should do to minimize fisheries violations in each other's waters, he asked if fishermen's organizations could educate fishers about fisheries laws, especially those that apply when they fish in other exclusive economic zones (EEZs). Excess fishing capacity is the main problem for illegal fishing in the Indian Ocean, he argued. Illegal fishing undermines the country's management system. Participation in international organizations can help harmonize fishing regulations, he said. He considered it important to disseminate information on fishing regulations of other countries. The causes of illegal fishing are multifaceted; they are linked to economic, cultural and social factors, it was pointed out. Illegal fishing was a political, scientific and humanitarian issue, observed another participant.

In Seychelles, the demersal stocks are reserved for the nationals, while foreigners harvest the pelagic resources under licensing arrangements. The shallow plateau is also reserved for the local fishers. Even pelagic stocks that are harvested in shallow waters are considered demersal stocks and reserved for the nationals. However, all forms of destructive fishing techniques are banned. The Seychelles fisheries management system and its institutional mechanisms are a good model for the Indian Ocean Region, said Payet. A permit is required to fish outside the Seychellois EEZ. Thus there is effective flag-State control on all fishing vessels. The illegal fishing vessels include those targeting sea cucumbers from Madagascar at the 30-m depth. In most cases of illegal fishing in Seychelles' waters, the vessels are apprehended but the crew are allowed to return home.

It was asked whether it was possible to accommodate small-scale fishing vessels from other

Indian Ocean countries, under licensing arrangements, to fish in the Seychelles, for instance, the demersal fishermen of Sri Lanka, as in the case of French tuna purse-seiners. It was also asked why fines for illegal fishing are exorbitantly high in the Seychelles.

5 East Africa

Maritime boundaries are not enforced between countries in East Africa, said Mucai Muchiri from Kenya, talking about illegal fishing by Tanzanian fishermen in Kenyan waters. Such fishing extends all the way up to Malindi, he said. The Tanzanians have relations in Kenya. In the north of Kimba, they have a fishing method involving dynamiting of corals after surrounding it with a seine, which is extremely unpopular, so they have to go neighbouring countries, like the Rameswaram trawlers in Sri Lanka, he said. Thais are also fishing illegally in Kenyan waters, as are Malawians in the inland waters of Mozambique. Tanzanians also illegally fish in Mozambique. Since fishermen have relatives on both sides of the country, resource management committees from both countries meet to solve the problem of border fishing in Mozambique, said Simeao Lopes from Mozambique. There are inter-gear conflicts involving fishermen from different countries. However, the problem is not as much between fishermen as between gear. The use of push-nets, in particular, has been creating problems, said Lopes.

East Africa may face problems with non-selective and illegal fishing that South Asia is currently facing, observed one participant, especially when fisheries develop further in East Africa. There is a five-mile limit for trawlers in Kenya, said Lopes. Some species have been almost completely overfished. Currently, Greek and Italian trawlers, as well as Spanish purse-seiners, fish in the waters of Kenya. It is 'free for all' outside the littoral waters, it was observed.

6 Conclusion

"There is no problem between the Indian Ocean peoples, the problem is between governments", observed one participant. Hundreds of thousands of fishermen from India and Bangladesh are finding solutions to common problems, without any involvement of governments, said Harekrishna Deb-nath from India.

Maizan Hassan Maniku from the Maldives disagreed. He said that the Maldivian fishermen do not want foreign fishermen coming into their waters. He said the fisheries laws of Maldives were enacted mainly to prevent foreign fishing activities in national waters and to protect the country's own fishermen.

It was generally agreed that whatever be the nature of fishing violations, the fishermen should not be made to languish in jail for illegal fishing activities. It was proposed that surplus total allowable catch (TAC) should be redistributed to riparian small-scale fisheries in the Indian Ocean, employing selective fishing methods and techniques. The

long-, medium- and short-term goals of riparian arrangements, however, should be clearly spelt out, it was proposed.

The main point that emerged was the difference in the perception of riparian rights from islands in the Indian Ocean and the mainland countries, including Sri Lanka. The countries that have the greatest stake in fisheries resources are keen to have the ground rules clearly spelt out. How to lay down the ground rules is important at this juncture. Riparian rights should not be seen as an opportunity to export excess capacity and destructive forms of fishing techniques, it was observed.



Sustaining Coastal Commons: Protecting the Right to Life and Livelihood of Fishing Communities

REPORT: WORKING GROUP II

In this session, presentations were made by participants from East Africa, followed by those from Asia.

1 East Africa

The presentations from Mozambique, Kenya, Zanzibar (Tanzania), Madagascar and South Africa had a common thread. They all highlighted the importance of artisanal fisheries in their countries and the fact that the sector was not sufficiently recognized or supported by the governments. The main support was to fisheries for commercially valuable species such as shrimp and tuna targeted by trawlers and industrial vessels.

The trawl fisheries for shrimp was considered especially destructive. While most of these countries have some zonation mechanism whereby trawlers and industrial vessels are not allowed to fish in defined artisanal zones, encroachments are common. The monitoring, control and surveillance (MCS) capability is typically poor and few resources are available with governments to improve this.

Encroachments by trawlers (both domestic and foreign) in inshore waters are highly detrimental, in that the nets and boats of artisanal fishermen are often destroyed. At the same time, high levels of by-catch and destructive fishing practices have an adverse impact on biodiversity and fish breeding. Moreover, the dumping of by-catch in local markets is depressing the prices available for local fishermen. Most of the trawlers are owned by those from outside the fishing community and, in several countries, they are foreign-owned.

Another shared issue in the region is the impact of rapid development of coastal areas, especially of tourism. In some cases, tourist resorts limit the access of fishers to beaches and marine resources. Industrial and domestic pollution and habitat destruction have impacts on fisheries resources and the livelihoods of fishermen.

The unregulated emergence of aquaculture, especially of shrimp aquaculture, in countries of East Africa is also beginning to raise concerns about its social, economic and environmental impacts.

In several of these countries, there are efforts to set up systems of participatory fisheries management. In Mozambique, for example, village committees, headed by traditional chiefs, have been set up. These committees design management systems for resources under their jurisdiction. Permits are required for migrants, and the migrant has to observe traditional laws. This has reduced conflicts with migrants. However, the rights of local committees, especially in terms of their powers of enforcement, are not yet clear. Even when violations are detected, committees have to report the offence to the authorities for necessary action—a mechanism that is not always effective.

The representative from South Africa highlighted the fact that artisanal fishers are still not recognized as a category, and traditional fishers are classified as subsistence fishers. The great hopes of “black empowerment” in the post-apartheid era have been belied, as fisheries policies have not led to an equitable access to resources.

2 Asia

There were presentations from Thailand, Bangladesh and India, and inputs from participants from Maldives and Sri Lanka.

All the presentations highlighted the importance of fisheries for employment, income and food security for large populations, and the fact that fishing communities tended to be among the most vulnerable sections of the population.

The presentation from India highlighted the immense ‘developmental’ pressures on coastal resources and the resultant pollution, habitat destruction, displacement of fishing communities and of fish resources. Such pressures include the development of harbours, thermal plants, industries, amusement parks, housing and tourism. In sev-

eral places, coastal areas are being reclaimed, and as natural flows are affected, coastal erosion is increasing.

The highly destructive impact that shrimp farming has had on mangrove habitats and on small-scale fishing communities was highlighted, especially in the case of Bangladesh, Thailand, Sri Lanka and India. Environmental rights abuses were equated with human rights abuses in such cases. It was emphasized that the expansion of shrimp aquaculture in mangrove areas persisted despite studies showing that long-term returns from a well-managed mangrove forest far exceeded the short-term returns from shrimp production, and that, from an economic perspective, intensive shrimp aquaculture is unsustainable.

The presentation from Thailand highlighted the efforts of fishing communities in southern Thailand to protect their resources and to pressure the government to adopt policies that protect environmental resources. For example, banning push-nets and providing protection to seagrass beds have helped in the reappearance of the dugong, a tourist attraction. This has helped the government realize that if the environment is better protected—as is possible by regulating destructive gear like push-nets—the increase in tourist inflows can generate alternative incomes and livelihoods. Communities are trying to ensure forms of tourist development that protect their environments and their interests.

The dugong was proposed as a symbol for the Indian Ocean community, as the presence of the dugong would be symbolic of a healthy marine ecosystem and, by extension, of a vibrant small-scale fishing community using selective gear.

In the case of Maldives, it was pointed out that formal law has assimilated elements of customary law. Efforts to enhance stakeholder participation are made through regular consultations with village committees.

Illegal fishing, by foreign or domestic trawlers and industrial vessels, was reported as a problem in almost all countries. This also leads to a wrong reporting of catches, as local boats may transfer their catches to foreign vessels, or foreign vessels may catch fish illegally from national waters, so that the catch is not reflected in national statistics. The poor MCS capabilities was seen as a related issue.

In conclusion, it was pointed out that the problems that are now emerging in East Africa, including those related to industrial fisheries, trawling, coastal degradation and shrimp aquaculture, have been affecting fishermen in Asia for the past few decades. The conflict with trawlers, for example, was already acute in the late 1970s. The negative impact of shrimp aquaculture has been experienced since the early 1990s. Given this situation, it was felt that an interaction between fishing communities from Asia and East Africa could be very beneficial. It could prevent the East Africans from repeating the same mistakes in their own contexts.

INTERNATIONAL COLLECTIVE IN SUPPORT OF FISHWORKERS(ICSF)
INTERNATIONAL OCEAN INSTITUTE (IOI), INDIA

Forging Unity: Coastal Communities
and the Indian Ocean's Future

IIT Madras, Chennai
9-13 October 2001

VISION STATEMENT

1. We, the participants from 13 countries of the Indian Ocean Region—Mozambique, South Africa, Kenya, Tanzania, Madagascar, India, Pakistan, Sri Lanka, Bangladesh, Thailand, Indonesia, Maldives and Seychelles—along with delegates from France, Belgium, UK and Norway, met at Chennai (Madras), India from 9 to 13 October 2001. Coming from fish-worker unions, research institutions and universities, NGOs, and governments, our purpose was to discuss issues and consider measures to forge unity among coastal communities for the sustainable and equitable utilization of fisheries resources in the Indian Ocean Region.
2. The Indian Ocean Region has great marine biological diversity and the largest number of commercial fish species in the world. Fish is an important source of food as well as employment, income and foreign exchange in the region. This region also has the largest number of fishworkers in the world. The majority are in the small-scale sector, using a diversity of craft-gear combinations. A significant proportion of the population lives in poverty, and from environmental and socio-economic points of view, coastal fishing communities are among the most vulnerable.
3. Rapid economic growth, without adequate considerations for equity, and fuelled by the pressures of liberalization and globalization, has increased the unregulated expansion of economic activities in coastal areas. These include rapid urban development, an increase in the number of polluting industrial units, the growth of luxury tourism and the expansion of industrial shrimp aquaculture, among others. This has hastened the degradation of coastal habitats and often led to the displacement of coastal fishing communities from their traditional living and occupational spaces. To regulate these trends, it is imperative to:
 - ensure effective legislation and institutional arrangements that adopt an integrated approach on access to, and use of, resources, bringing in both the landward and seaward components of the coastal zone and its dynamic interface;
 - institute participatory mechanisms for decisionmaking on coastal resource use, according to the principle of subsidiarity, in order to ensure the representation of traditional coastal communities, especially those involved in artisanal/small-scale fisheries;
 - guarantee priority rights of coastal fishing communities to the coastal area where they live and the aquatic resources to which they have customarily enjoyed access for livelihood; and
 - assure priority to decent living conditions for coastal fishing communities and safeguard their own development interests.
4. The Indian Ocean Region is characterized by fragile and highly productive ecosystems, with complex species and environmental inter-relationships. However, in almost all countries of the Indian Ocean Region, fishery resources in the nearshore waters are poorly managed and overexploited. While these resources are the mainstay of the livelihood of fishing families, they are often subject to encroachment by domestic and foreign large-scale fishing vessels, often using

non-selective, destructive gear such as bottom trawls. These unsustainable practices also lead to the damage of small-scale fishing gear and, at times, loss of life through collisions. While untapped resources in offshore areas are known to exist, management arrangements for them are poor or non-existent. The Indian Ocean has important oil and mineral resources, which are being exploited. It is also an ocean with extensive maritime transport, and is a sink for urban, industrial and toxic wastes. To defend the livelihood of the small-scale fishing communities and maintain the productivity and integrity of this ocean and its resources, it is imperative that:

- a socially just ecosystem approach to resource use and fisheries resource management is adopted by States in the region;
 - States should phase out destructive gear, such as bottom trawling, and assess and reduce overcapacity, in accordance with the FAO's International Plan of Action for the Management of Fishing Capacity. For social, economic and ecological reasons, the capacity of the industrial fleet that engages in the same fisheries as the small-scale sector should be minimized as a matter of priority;
 - States should encourage small-scale, selective, sustainable harvesting technologies with strong backward and forward linkages that enhance and maintain employment opportunities within fishing communities; and
 - States should prevent marine pollution from activities such as maritime transport and infrastructure development, extraction of non-living resources, dumping of toxic and other wastes in the region, and introduction of exotic species, in accordance with relevant international conventions and other instruments, including the Global Plan of Action for the Protection of the Marine Environment from Land-based Activities (GPA/LBA).
5. The role of women in the economic activities of coastal fishing communities differs by region and culture, but is universally vital in sustaining livelihoods. The degradation of coastal ecosystems and the displace-

ment of fishing communities from their living spaces have adversely affected the workload and quality of life of women of these communities. Given the almost complete absence of data and recognition of women's work in fishing communities, little is known about these aspects. It is imperative to:

- recognize and value the work of women, and to develop a database on their work in coastal fishing communities;
 - safeguard the existing spaces of women in fisheries;
 - ensure women's participation in resource management and other decision-making processes; and
 - improve conditions of work of women in fish processing plants in both the organized and unorganized/informal sector.
6. Unauthorized transboundary movement of small-scale fishing vessels and the subsequent detention and punishment of fishworkers by States has become a major issue for many coastal communities as well as for administrators who grapple with the problem. This is largely the consequence of the declaration of exclusive economic zones (EEZs), which sometimes prevents coastal fishworkers from accessing their traditional fishing grounds. However, it is also a result of other compulsions, such as the enhanced fishing capacities of the artisanal small-scale fishing fleets, as well as the depletion of local, coastal fisheries resources. This complex problem needs context-specific solutions that protect the human rights of fishworkers. It is important that:
- implementation of legislation to deal with the arrest and detention of fishworkers in the waters of other coastal States should be in accordance with Article 73 of the 1982 United Nations Convention on the Law of the Sea (1982 Convention), the UN International Covenant on Civil and Political Rights, 1976 and the UN International Covenant on Economic, Social and Cultural Rights, 1976, among others. Penalties for illegal fishing should be based on the principles of necessity and proportionality;

- States should evolve necessary mechanisms for the release and repatriation of arrested fishermen on a priority basis;
 - recognizing that rigid enforcement of maritime boundaries in historic waters in relation to communities that live and fish close to such boundaries can lead to tragic consequences, the interests of such communities need to be accommodated, along with security and other national concerns;
 - fishworkers using small-scale vessels apprehended in territorial waters for illegal fishing should not be prosecuted under laws that apply to illegal immigrants. In such cases, the fact that the illegal fishing occurs within territorial waters rather than the EEZ should not lead to punishments that are more severe than those for similar violations in the EEZ; and
 - fishworkers should not be made victims of maritime boundary disputes between States. States need to have working arrangements that provide fishworkers access to resources in such fishing grounds for life and livelihood.
7. The development of relatively small boats with long endurance capabilities and using selective fishing methods has demonstrated that large industrial fleets, often from non-riparian States, can be superfluous for the exploitation of all highly migratory resources. In order to encourage this evolving small-scale sector of riparian developing States:
- coastal States with surplus resources should consider providing preferential access to such artisanal/small-scale seaworthy fishing vessels, subject to effective flag State control and responsibility;
 - States should, where such opportunities exist, facilitate the conclusion of an agreement that allows its small-scale long-distance fleet to legally engage in such fisheries in a responsible manner;
 - States should not export excess capacity and destructive fishing methods;
 - coastal States should, given that at least a part of the reason for transboundary movement is the poor management of EEZs in many countries, improve the management of their fisheries resources, exercise effective control over their fleet, and move towards responsible fisheries; and
- States should be enabled to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing, in accordance with the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU). This is of special concern to developing States, especially small island developing States, that depend heavily on their fisheries resources for food security, economic well-being and development.
8. The principal beneficiaries of the current fishing pattern for valuable highly migratory fish stocks in the Indian Ocean Region are not those coastal States whose territories are principally in this region. The rapid growth of tuna catches by distant-water fishing nations in the very recent past should not be interpreted to have established a habitual right in the sense of the 1982 Convention. Decisions on access to these resources should, instead, be governed by:
- a true tradition of harvesting these resources;
 - dependency of a country's economy on these resources; and
 - the potential of economic and social development for small island developing States and other developing countries in the region.
9. There is evidence that coastal States in the region have accepted fishing agreements with distant-water fishing nations that have not been to the best long-term interests of their economies or to the advantage of their coastal fishing communities. This has often been caused by unfair pressure being exerted through linking the conditions of the fisheries access agreements to the provision of aid and trade, in contravention of international instruments. To create fair fishing arrangements:
- States should apply Articles 11.2.7 and 11.2.8 of the FAO Code of Conduct for Responsible Fisheries, which discourage

States from making access to markets a condition for access to resources;

- States should develop national fisheries policies in which the coastal fishing communities' rights and needs are taken into account before entering into any negotiation for granting access to distant-water fishing nations;
 - States should ensure full transparency and accountability in their dealings with distant-water fishing companies and joint ventures and agreements in order to combat corruption; and
 - conditions of work and service on board distant-water fishing vessels should conform to generally accepted international regulations, procedures and practices, in particular those adopted by the International Labour Organization (ILO).
10. Coastal communities in the Indian Ocean Region stand to gain from greater interaction and sharing of information and experiences, capabilities, skills and development alternatives. Many of the countries in the western Indian Ocean Region can also draw lessons from the negative experiences of the Asian

countries in pursuing development strategies in the realm of fisheries and industrialization. These have had an adverse impact on coastal fisheries resources and coastal ecosystems at an earlier point in time. An example would be the negative impact that industrial shrimp aquaculture has had on the coastal habitats and livelihoods of coastal communities.

11. Keeping the above in mind, as well as the many positive examples of community-based and sustainable development alternatives, it is imperative to strengthen appropriate South-South co-operation. This is particularly relevant in the realm of human resource capability building, use of appropriate and environmentally selective technologies, exchange of experiences in community development projects and resource conservation and rejuvenation measures.
12. In adopting this Vision Statement in the *United Nations Year of Dialogue Among Civilizations* and amidst the current challenges to world peace, we are especially conscious of our responsibility and duty to continue to promote co-operation among nations and forge unity of the coastal communities in the Indian Ocean's future.

Chennai, India
13 October 2001

COLLECTIF INTERNATIONAL D'APPUI AUX TRAVAILLEURS DE LA PECHE (ICSF)
INSTITUT INTERNATIONAL DE L'OCÉAN (IOI), Inde

Forger l'Unité: les communautés côtières
et l'avenir de l'Océan Indien

IIT Madras, Chennai
9-13 Octobre 2001
DECLARATION

1. Nous, participant(e)s de treize pays de la région de l'Océan Indien–Mozambique, Afrique du Sud, Kenya, Tanzanie, Madagascar, Inde, Pakistan, Sri Lanka, Bangladesh, Thaïlande, Indonésie, Maldives and Seychelles—avec des délégué(e)s de France, Belgique, Royaume Uni et de Norvège, nous sommes rencontrés à Chennai (Madras)–Inde du 9 au 13 octobre 2001. Nous faisons partie d'organisations de pêcheurs à petite échelle, d'instituts de recherche, d'universités, d'ONG, de gouvernements. Notre objectif était de discuter les enjeux et envisager quelles mesures sont appropriées pour forger l'unité entre les communautés côtières de la région Océan Indien, dans une perspective d'utilisation durable et équitable des ressources.
2. L'Océan Indien possède une grande diversité biologique marine et abrite le plus grand nombre d'espèces commerciales de poissons au monde. Le poisson y est une source de nourriture, d'emplois et de rentrées en devises importante pour la région. Cette région compte également le plus grand nombre de pêcheurs au monde. La majorité de ces pêcheurs viennent du secteur à petite échelle, qui utilisent une grande diversité d'engins et d'embarcations de pêche. Une proportion significative de la population de l'Océan Indien vit dans la pauvreté, et d'un point de vue environnemental et socio-économique, les communautés côtières de pêche sont parmi les plus vulnérables.
3. La rapide croissance économique, sans considérations adéquate du principe d'équité, attisée par les pressions de la libéralisation et de la mondialisation, a provoqué l'expansion anarchique des activités économiques dans les zones côtières. Celles-ci incluent, entre autres, le développement urbain rapide, l'augmentation du nombre des unités industrielles polluantes, la croissance du tourisme de luxe et l'expansion de l'aquaculture industrielle. Cela a précipité la dégradation des habitats en zone côtière et, souvent, conduit au déplacement des communautés côtières de pêche de leurs espaces traditionnels de vie et de travail.
Pour réguler ces tendances, il est impératif:
 - d'assurer que des mécanismes légaux et institutionnels adoptant une approche intégrée pour l'accès et l'utilisation des ressources soient mis en place. Ces mécanismes prendront en compte tant la composante maritime que terrienne de la zone côtière étant donné que ces deux éléments constituent une interface dynamique;
 - d'instituer des mécanismes participatifs pour la prise de décision concernant l'utilisation des ressources côtières, conformément au principe de subsidiarité, afin de garantir la représentation des communautés côtières traditionnelles, spécialement ceux impliquées dans les pêcheries artisanales et à petite échelle;
 - de garantir des droits prioritaires pour les communautés de pêche sur la zone côtière où ils vivent et sur les ressources aquatiques auxquelles ils ont eu traditionnellement eu accès pour assurer leur gagne-pain;
 - de donner la priorité à l'instauration de conditions de vie décentes pour les communautés de pêche côtières afin de sauvegarder leur propre développement.
4. La région de l'Océan Indien est caractérisée par une grande biodiversité marine et des écosystèmes hautement productifs mais fragiles. Cependant, dans presque tous les pays de la région Océan Indien, les ressources de pêche dans les eaux côtières sont mal gérées

et surexploitées. Alors que cette zone est le pilier de la vie des familles de pêcheurs, elles font souvent l'objet d'incursions de bateaux de pêche nationaux et étrangers. Ces bateaux utilisent souvent des engins non sélectifs comme les chaluts de fond. Ces pratiques non-durables mènent à l'endommagement des engins de pêche des petits pêcheurs et, parfois, à des pertes de vie humaines lors de collisions en mer. Alors qu'il est avéré que des ressources non exploitées existent dans les zones éloignées des côtes, les outils de gestion de ces ressources sont faibles voire inexistants. L'Océan Indien possède également des ressources minérales et pétrolières importantes, qui sont exploitées. C'est également un océan où existe un intense transport maritime et qui sert d'égoût pour les déchets toxiques urbains et industriels. Pour défendre le gagne-pain des communautés de pêche à petite échelle et maintenir la productivité et l'intégrité de cet océan et de ses ressources, il est impératif:

- qu'une approche basée sur les écosystèmes, socialement juste, soit adoptée par les états de la région pour l'utilisation et la gestion des ressources de pêche;
- les états de la région devraient progressivement éliminer les engins destructifs, comme le chalut de fond; évalueret réduire la surcapacité de pêche, en accord avec le Plan International d'Action pour la Gestion de la Capacité de Pêche. Pour des raisons sociales, économiques et écologiques, la capacité de pêche du secteur industriel engagé dans les mêmes pêcheries que le secteur de la pêche à petite échelle devrait être diminué en priorité;
- les états devraient encourager l'adoption de technologies de pêche durables, sélectives et à petite échelle, fortement liées aux activités en amont et en aval, et qui contribuent à l'amélioration et au maintien des opportunités d'emploi dans les communautés de pêche.
- Les états de la région devraient prévenir la pollution marine provoquée par les activités comme le transport maritime, le développement d'infrastructures, l'extraction de ressources non-vivantes,

le rejet de déchets toxiques et autres, l'introduction d'espèces exotiques, ceci en accord avec les conventions internationales pertinentes et les autres instruments internationaux, comme le Plan Global d'Action pour la Protection de l'Environnement Marin contre la Pollution des Activités basées à terre (GPA-LBA)

5. Le rôle des femmes dans l'activité économique des communautés de pêche côtière varie selon les endroits et les cultures, mais joue partout un rôle vital pour assurer les moyens d'existence des communautés. La dégradation des écosystèmes côtiers et le déplacement des communautés de pêche de leurs espaces de vie traditionnels ont eu un impact négatif sur la charge de travail et la qualité de vie de ces femmes. Etant donné le manque de reconnaissance du travail des femmes dans les communautés de pêche et l'absence complète de données les concernant, ces aspects sont méconnus. Il est impératif de:
 - reconnaître et valoriser le travail des femmes et de développer une base de données sur leur travail dans les communautés côtières de pêche;
 - assurer que les espaces existants pour les femmes dans la pêche sont sauvegardés;
 - Assurer la participation des femmes dans la gestion des ressources et dans les autres processus de prise de décision;
 - Améliorer les conditions de travail des femmes dans les entreprises de transformation du poisson tant dans le secteur organisé que dans le secteur non organisé ou informel.
6. Les mouvements trans-frontaliers non autorisés de bateaux de pêcheurs artisans, leur détention subséquente et les peines appliquées par les états est devenu un enjeu majeur tant pour les communautés côtières de pêcheurs que pour les administrateurs qui doivent gérer ce problème. Ceci est souvent une conséquence de la déclaration des Zones Economiques Exclusives (ZEE) en application de la déclaration des Nations Unies sur le Droit de la Mer de 1982, qui a coupé, pour les pêcheurs côtiers, l'accès à leurs zones traditionnelles de pêche. Cependant, ces mouvements trans-frontaliers sont aussi le résultat

d'autres pressions comme l'augmentation de capacité des flottes de pêche artisanales et la surexploitation des ressources de pêche côtières locales. Ce problème complexe a besoin de solutions, adaptées aux différents contextes, qui protègent les droits humains des pêcheurs. Il est important que:

- La législation appliquée lors des arrestations et des détentions de pêcheurs dans les eaux des autres états côtiers ne viole pas l'esprit de l'article 73 de la Convention de 1982, ni ne contrevienne aux articles appropriés de, entre autres, l'Accord International sur les Droits Civils et Politiques, 1976 et l'Accord International sur les Droits Economiques, Sociaux et Culturels, 1976. Les sanctions pour les actions de pêche illégale devraient être basées sur le principe de proportionnalité.
- Les états devraient, en priorité, disposer des mécanismes nécessaires à la libération et au rapatriement des pêcheurs arrêtés.
- Reconnaissant que l'application rigide des frontières maritimes dans les eaux historiquement utilisées par les communautés qui vivent et pêchent près de ces frontières peut avoir des conséquences tragiques, les intérêts de ces communautés doivent être pris en compte au même titre que le souci de sécurité et les autres intérêts nationaux des états.
- Les pêcheurs à petite échelle appréhendés dans les eaux territoriales ne devraient pas être poursuivis par les lois s'appliquant aux immigrés illégaux. Dans ce cas, le fait que l'acte illégal de pêche se passe dans les eaux territoriales plutôt que dans la ZEE ne devrait pas mener à des sanctions plus sévères que celles appliquées pour des violations similaires dans la ZEE.
- Les pêcheurs ne devraient pas être les victimes des disputes pour la fixation de frontières maritimes entre Etats. Les états devraient trouver des accords pratiques fournissant aux pêcheurs un accès aux ressources de ces zones de pêche dont dépend leur vie et leur gagne-pain.
- Etant donné qu'au moins une partie des raisons pour lesquelles il y a

ces déplacements trans-frontaliers est la mauvaise gestion des ressources de la ZEE, les états côtiers devraient améliorer la gestion de leurs ressources de pêche, exercer un contrôle réel sur leur flotte et développer une pêche responsable.

7. Le développement de bateaux relativement petits ayant des capacités importantes en termes d'endurance et utilisant des méthodes de pêche sélectives a démontré que les flottes industrielles, souvent en provenance d'états non côtiers, peuvent se révéler superflues pour l'exploitation des ressources hautement migratoires. Afin d'encourager cette évolution d'un secteur à petite échelle au niveau des états côtiers de la zone Océan Indien:

- les états côtiers ayant un surplus de ressources devraient considérer l'octroi d'un accès préférentiel à cette pêche artisanale longue distance, qui devrait faire l'objet d'un contrôle et être sous la responsabilité de l'état du pavillon;
- les états devraient, lorsque l'opportunité se présente, faciliter la conclusion d'un accord qui permette à cette flotte à petite échelle longue distance d'être légalement engagée dans ce type de pêche de façon responsable.
- Les états ne devraient pas exporter leur excès de capacité ni leurs méthodes de pêche destructives;
- Les états devraient pouvoir prévenir, empêcher et éliminer la pêche illégale, non régulée et non documentée (IUU fishing) en accord avec le Plan d'Action International contre la pêche illégale (IUU). Ceci est un souci particulier pour les états en développement, spécialement les états insulaires des pays en développement, qui dépendent fortement de leurs ressources de pêche pour leur sécurité alimentaire, leur bien être économique et leur développement.

8. Dans la région de l'Océan Indien, les principaux bénéficiaires du modèle actuel de pêche pour les stocks de pêche migrateurs de grande valeur commerciale ne sont pas les états côtiers dont les territoires principaux sont en Océan Indien. Au cours de ces dernières décennies, les prises de thonidés

par les nations de pêche longue distance dans la région ont augmenté. Cela ne devrait pas être interprété comme un droit d'usage au sens où l'entend la Convention de 1982. Les décisions concernant l'accès à ces ressources devraient plutôt être motivées par:

- L'existence d'une véritable tradition de pêche pour ces ressources;
 - La dépendance de l'économie d'un pays donné par rapport à ces ressources;
 - Le potentiel de développement social et économique des états insulaires et des autres états en développement de la région.
9. Les éléments existent que les accords de pêche signés par les états côtiers avec des nations de pêche longue distance n'ont pas été dans le meilleur intérêt à long terme de leurs économies ou à l'avantage des communautés côtières de pêche. Cela s'explique par le fait qu'une pression déloyale a été exercée en liant les conditions de ces accords d'accès avec des éléments d'aide au développement et de concessions commerciales, en contravention avec les instruments internationaux existants. Afin de créer des accords de pêche équitables, il est nécessaire que:
- Les états appliquent les articles 11.2.7 et 11.2.8 du Code de Conduite de la FAO pour une pêche responsable, décourageant les états de conditionner l'accès aux marchés à l'accès aux ressources.
 - Les états devraient développer des politiques nationales de pêche dans lesquelles les droits des communautés côtières de pêche et leurs besoins sont pleinement pris en compte avant d'entrer dans aucune négociation qui octroie des possibilités d'accès pour les nations de pêche à longue distance.
 - Les états devraient assurer la transparence dans leurs interactions avec des

nations et entreprises de pêche longue distance (accords de pêche, constitution de sociétés mixtes, etc) afin de combattre la corruption;

- Les conditions de travail à bord des bateaux de pêche longue distance devrait être conforme aux déclarations et aux standards de l'Organisation internationale du travail et aux autres normes et lois internationales.
10. Les communautés côtières de l'Océan Indien gagneront à avoir de plus grandes interactions et partages d'expériences, d'information, de "capacity building", de savoir faire et d'alternatives de développement. Nombre de pays de la région Ouest de l'Océan Indien peuvent aussi tirer les enseignements des expériences négatives dans les pays d'Asie pour poursuivre les stratégies de développement dans le domaine des pêcheries. Un exemple d'impact négatif vécu en Asie est celui que l'aquaculture industrielle de crevettes a eu sur les habitats et la vie des communautés côtières.
11. En gardant à l'esprit ces différents éléments, ainsi que de nombreux exemples positifs d'alternatives de développement durable basé sur les communautés, il est impératif de renforcer une coopération sud-sud appropriée. Cela est particulièrement pertinent dans le domaine des ressources humaines et du "capacity building", de l'utilisation de technologies environnementalement appropriées et sélectives, de la conservation des ressources et des mesures de renouvellement de l'écosystème.
12. En adoptant cette déclaration au cours de l'Année Internationale des Nations Unies pour le Dialogue entre les Civilisations, et alors que la paix mondiale est en péril, nous sommes spécialement conscients de la responsabilité et du devoir que nous avons de promouvoir la coopération entre les nations et de forger l'unité des communautés côtières pour l'avenir de l'Océan Indien.

COLECTIVO INTERNACIONAL DE APOYO AL PESCADOR ARTESANAL (ICSF)
INSTITUTO INTERNACIONAL OCÉANO (IOI) India

Forjamos unidad: las comunidades costeras y el futuro del océano Índico

IIT Madrás, Chennai
Del 9 al 13 de octubre 2001

MANIFIESTO

1. Nosotros, los participantes de 13 países de la región del océano Índico Mozambique, Sudáfrica, Kenia, Tanzania, Madagascar, India, Paquistán, Sri Lanka, Bangladesh, Tailandia, Indonesia, Maldivas y Seychelles junto con delegados de Francia, Bélgica, Gran Bretaña y Noruega, nos hemos congregado en Chennai (Madrás), India, del 9 al 13 de octubre 2001. Nos hemos reunido aquí, en representación de sindicatos, institutos de investigación y universidades, ONG y gobiernos, con el ánimo de discutir y estudiar medidas orientadas a forjar la unidad entre las comunidades costeras en aras de un uso sostenible y equitativo de los recursos pesqueros de la región del océano Índico.
2. La región del océano Índico encierra una gran diversidad biológica y marina, así como el mayor número de especies marinas de valor comercial del mundo. En la región, los productos pesqueros constituyen una importante fuente de alimento y de empleo, de ingresos y de divisas extranjeras. Asimismo, esta zona alberga al mayor número de trabajadores de la pesca del mundo que, en su mayoría, se encuadran en el sector de pesquerías a pequeña escala y utilizan una enorme variedad de combinaciones de artes y barcos. Un porcentaje significativo de la población de la zona vive en condiciones de pobreza. Desde un punto de vista medioambiental y socioeconómico, las comunidades pesqueras de la costa constituyen uno de los colectivos más vulnerables.
3. Un rápido crecimiento económico ajeno a criterios de equidad y propulsado por los procesos de liberalización y globalización ha acelerado la expansión indiscriminada de actividades económicas en las zonas litorales.

Entre estas actividades cabe citar el rápido desarrollo urbano, el aumento del número de unidades industriales contaminantes, el auge del turismo de lujo y la expansión de la acuicultura industrial de camarón. Estos fenómenos han precipitado la degradación de los hábitats marinos y con frecuencia han conllevado el desalojo de las comunidades pesqueras de la costa de sus espacios tradicionales de vida y trabajo. Con el fin de regular estas tendencias se hace imprescindible:

- elaborar leyes y acuerdos institucionales eficaces articulados en función de un enfoque integrado del acceso y el uso de los recursos. Este enfoque debe englobar los aspectos marítimos y terrestres de la zona costera y también contemplar el dinamismo de su interrelación.
- instaurar mecanismos participatorios en el proceso decisorio que regula el uso de los recursos costeros, en consonancia con el principio de subsidiariedad, con el objeto de asegurar la representación de las comunidades pesqueras tradicionales y, en especial, de aquéllas implicadas en las pesquerías a pequeña escala o artesanales.
- garantizar el derecho prioritario de las comunidades pesqueras costeras con respecto a la zona del litoral que habitan y a los recursos acuáticos de cuyo acceso han disfrutado tradicionalmente para ganarse un sustento; y
- plantearse como prioridad que las comunidades pesqueras costeras puedan disfrutar de unas condiciones de vida dignas y salvaguarden sus propios intereses de desarrollo.

4. La región del Océano Índico se caracteriza por unos ecosistemas frágiles y sumamente productivos, marcados por unas complejas interrelaciones entre especies y hábitats. No obstante, en casi todos los países de la región del océano Índico, los recursos pesqueros de las áreas costeras están sujetos a una gestión deficiente y se encuentran sobreexplotados. Estos recursos, que constituyen el principal sostén de las familias de pescadores, muy a menudo están sometidos a la incursión de buques pesqueros a gran escala, nacionales y extranjeros, que se sirven de artes no selectivos y destructivos, como por ejemplo el arrastre de fondo. Estas prácticas tan poco sostenibles con frecuencia estropean artes de pesca a pequeña escala y, a veces, propician colisiones que pueden acabar con vidas humanas. Aunque se sabe que las aguas de altura todavía albergan recursos no explotados, las medidas de gestión destinadas a ellos son deficientes, cuando no inexistentes. El océano Índico contiene importantes recursos minerales y petrolíferos en proceso de explotación. Asimismo, en él el transporte marítimo y el vertido de desechos urbanos, industriales y tóxicos son muy intensos. Con el fin de defender el sustento de las pequeñas comunidades pesqueras a pequeña escala y de mantener la productividad y la integridad del océano y de sus recursos, es fundamental que:

- los Estados ribereños adopten un enfoque con relación al medio ambiente que sea socialmente justo en cuanto al uso de los recursos y a la gestión de los recursos pesqueros;
- los Estados prohíban los artes destructivos, como el arrastre de fondo, y que evalúen y reduzcan la sobrecapacidad, de acuerdo con el Plan de Acción Internacional para la Ordenación de la Capacidad Pesquera de la FAO. Por motivos de orden social, económico y ecológico, los Estados deberían dar prioridad a la reducción de la capacidad de la flota industrial que participe en las mismas pesquerías que el sector a pequeña escala.
- los Estados alienten el uso de tecnologías extractivas a pequeña escala, selectivas y sostenibles, que generen actividades anteriores y posteriores a la captura,

de forma que mantengan y amplíen las oportunidades laborales en el seno de las comunidades pesqueras; y

- los Estados eviten la contaminación derivada de actividades como el transporte marítimo y el desarrollo de infraestructuras, la extracción de recursos no vivos, el vertido de tóxicos y otros desechos y la introducción de especies exóticas, en consonancia con las convenciones internacionales que las regulan y con otros instrumentos, como el Plan Global de Acción para la Protección del Medio Ambiente Marino de Actividades Terrestres (cuyas siglas en inglés son GPA/LBA).

5. El papel de la mujer en las actividades económicas de las comunidades pesqueras de la costa varía en dependencia de la región y de la cultura. Aun así, su vital importancia para el sustento de las comunidades es universal. La degradación de los ecosistemas marinos junto con el desalojo de las comunidades pesqueras de sus espacios tradicionales de vida y trabajo han repercutido negativamente en el volumen de responsabilidades y en la calidad de vida de estas mujeres. La casi absoluta carencia de datos y de reconocimiento a la labor femenina dentro de las comunidades pesqueras hacen que la realidad de la mujer sea muy poco conocida. Por ello, resulta fundamental:

- reconocer y valorar el trabajo de la mujer, así como crear una base de datos sobre su labor en las comunidades pesqueras de la costa;
- salvaguardar el espacio que la mujer ocupa en las pesquerías;
- asegurar la participación femenina en la gestión de los recursos y en otros procesos decisivos, y
- mejorar las condiciones laborales de las mujeres que trabajan en plantas de procesamiento de pescado, ya se encuadren en el sector formal o en el sector informal.

6. El tráfico no autorizado de las embarcaciones pesqueras a pequeña escala a través de las fronteras nacionales y la subsiguiente detención y castigo de los trabajadores de la

pesca por parte de los Estados han adquirido gran relevancia para muchas comunidades costeras y las administraciones que se ven enfrentadas a este tipo de situaciones. En gran medida, estas detenciones se derivan de la declaración de las zonas económicas exclusivas (ZEE), que muchas veces barran a los pescadores costeros el acceso a sus bancos de pesca tradicionales. Sin embargo, también deben atribuirse a las mejoras en la capacidad extractiva de las flotas artesanales locales a pequeña escala y al agotamiento de los recursos pesqueros locales de la costa. Este intrincado problema precisa soluciones que contemplen la especificidad de cada caso y que protejan los derechos humanos de los trabajadores de la pesca. Por ello, es imprescindible que:

- la implementación de las leyes que aborden el problema del arresto y detención de trabajadores de la pesca en aguas de otros Estados costeros se ajuste al Artículo 73 de la Convención de las Naciones Unidas sobre el Derecho del Mar (Convención de 1982) y, entre otros documentos, al Convenio Internacional de Derechos Civiles y Políticos de las Naciones Unidas, de 1976, y al Convenio Internacional de las Naciones Unidas sobre Derechos Económicos, Sociales y Culturales de 1976. Las sanciones impuestas a la pesca ilegal deberían regirse por criterios de necesidad y proporcionalidad;
- los Estados desarrollen los mecanismos adecuados para dar prioridad a la liberación y repatriación de los pescadores arrestados;
- se admita que el rígido cumplimiento de la observación de las fronteras marítimas en aguas históricas con respecto a las comunidades que viven y pescan cerca de estas fronteras puede acarrear consecuencias trágicas. Se reconozca que deben satisfacerse los intereses de estas comunidades, su seguridad y otras cuestiones de orden nacional.
- en los juicios contra pescadores arrestados en aguas territoriales a bordo de embarcaciones a pequeña escala y acusados de pesca ilegal, no se apliquen las leyes

correspondientes a la inmigración ilegal. En estos casos, la pesca ilegal en aguas territoriales, y no en la ZEE, no debería castigarse de forma incluso más severa que otros delitos similares perpetrados en la ZEE.

- los trabajadores de la pesca no se conviertan en víctimas de las disputas sobre fronteras marítimas que enfrentan a los Estados. Con relación a este tipo de bancos de pesca, los Estados deben suscribir acuerdos que otorguen a los pescadores acceso a los recursos, siempre que éstos lo necesiten para ganarse un sustento.
7. La aparición de embarcaciones pesqueras relativamente pequeñas con la resistencia necesaria para efectuar salidas prolongadas y que utilizan artes selectivos ha demostrado que las grandes flotas industriales, a menudo procedentes de Estados no ribereños, pueden resultar superfluas para la explotación de los recursos altamente migratorios. Con el objeto de promocionar este pequeño sector a pequeña escala de países en vías de desarrollo y que actualmente se encuentra en expansión:
- los Estados costeros con recursos excedentes deberían considerar la posibilidad de conceder un acceso preferente a este tipo de embarcaciones pesqueras artesanales / a pequeña escala, capaces de faenar en alta mar, mediante el control y bajo la responsabilidad del Estado cuya bandera ondeen.
 - los Estados deberían, ahí donde se den las condiciones necesarias, suscribir acuerdos que permitan a su flota de altura a pequeña escala participar legalmente en este tipo de pesquerías de forma responsable;
 - los Estados no deberían exportar su exceso de capacidad ni métodos de pesca destructivos;
 - teniendo en cuenta que parte de las causas del tráfico transfronterizo estriban en la gestión deficiente de las ZEE en muchos países, los Estados costeros deberían mejorar la gestión de sus recursos pesqueros, ejercer un control efectivo sobre su flota y avanzar hacia unas pesquerías responsables, y

- los Estados deberían estar capacitados para prevenir, desalentar y eliminar la pesca ilegal, no registrada y no regulada (en inglés IUU) en concordancia con el Plan de Acción Internacional para Prevenir, Desalentar y Eliminar la Pesca Ilegal, No Declarada y No Reglamentada (PAI-INDNR). Este punto reviste una importancia especial para los Estados en vías de desarrollo que dependen en gran medida de sus recursos pesqueros de cara a su seguridad alimentaria, su bienestar económico y su desarrollo.
8. Los principales beneficiarios de las pautas que actualmente se observan en la explotación de stocks altamente migratorios en el océano Índico no coinciden con los países costeros cuyos territorios yacen principalmente en esta región. El rápido incremento que han experimentado las capturas de atún correspondientes a las pesquerías de altura de países remotos no debería interpretarse como si éstas gozaran de un derecho instaurado y habitual en el sentido explicitado en la Convención de 1982. Muy al contrario, las decisiones relativas al acceso a estos recursos deberían regirse por:
- una verdadera tradición en la captura de estos recursos;
 - la dependencia de la economía de un país de estos recursos; y
 - el potencial de desarrollo económico y social para los pequeños Estados isleños en vías de desarrollo y otros países en vías de desarrollo de la zona.
9. Resulta evidente que los Estados costeros de la región han suscrito acuerdos pesqueros con naciones pesqueras remotas cuyo contenido no favorece los intereses a largo plazo de su economía ni tampoco de sus comunidades pesqueras de la costa. Con frecuencia, este comportamiento ha dado lugar a presiones injustas ocasionadas por las condiciones anexas a los acuerdos de acceso pesquero que abordan temas de ayuda y comercio, en detrimento de los instrumentos internacionales. Para que los acuerdos pesqueros sean justos:
- los Estados deberían aplicar los artículos 11.2.7 y 11.2.8 del Código de Conducta para la Pesca Responsable de la FAO, que no recomienda a los Estados que impongan la condición de acceso a los mercados a cambio del acceso a los recursos;
 - los Estados deberían elaborar políticas pesqueras nacionales en virtud de las cuales los derechos y necesidades de las comunidades pesqueras se tengan en cuenta previamente a la negociación de cesión de acceso pesquero a naciones pesqueras remotas;
 - con el objeto de combatir la corrupción, los Estados deberían garantizar una plena transparencia en sus tratos con compañías de pesca de altura, en la creación de compañías pesqueras conjuntas y en la redacción de acuerdos conjuntos; y
 - las condiciones laborales y de servicio a bordo de buques pesqueros de gran altura deberían ajustarse a reglamentos, procedimientos y prácticas aceptadas internacionalmente, en especial los adoptados por la Organización Internacional del Trabajo (OIT).
10. Las comunidades costeras de la cuenca del océano Índico se proponen beneficiarse de una mayor interacción e intercambio de información, experiencias, capacidades, habilidades y alternativas de desarrollo. Muchos de los países de la cuenca occidental del océano Índico también pueden aprender de las desafortunadas experiencias vividas por los países asiáticos al aplicar estrategias de desarrollo en el ámbito de las pesquerías y la industrialización. Casi inmediatamente después de ser aplicadas, estas estrategias tuvieron un efecto muy pernicioso sobre los recursos y los ecosistemas costeros. Valga como ejemplo el negativo impacto de la acuicultura industrial de camarón sobre los hábitats costeros y el sustento de las comunidades costeras.
11. Teniendo en mente todos los puntos enumerados, así como muchos ejemplos positivos de alternativas de desarrollo sostenible ancladas en la comunidad, resulta sumamente necesario afianzar una apropiada cooperación Sur-Sur, que adquiere una relevancia especial en los ámbitos de formación de los recursos humanos, uso de tecnologías adecuadas

y selectivas con el medio ambiente, intercambio de experiencias relacionadas con proyectos de desarrollo comunitario y medidas de conservación y rejuvenecimiento de los recursos.

12. Al adoptar este Manifiesto en el *Año de las Naciones Unidas del Diálogo entre Civilizaciones*

y a la vista de los actuales desafíos que ponen en peligro la paz mundial, somos especialmente conscientes de nuestra responsabilidad y nuestro deber de continuar promoviendo la cooperación entre diferentes naciones y de forjar la unidad de las comunidades costeras en el futuro del océano Índico.

Chennai, India
13 de octubre de 2001

INTERNATIONAL COLLECTIVE IN SUPPORT OF FISHWORKERS (ICSF)
INTERNATIONAL OCEAN INSTITUTE (IOI), INDIA
 Forging Unity: Coastal Communities and the Indian Ocean's Future
 Indian Institute of Technology, Chennai, India

09 to 13 October 2001

PROGRAMME

Day 1	Tuesday, 09 October 2001	
9:00 – 10:00	REGISTRATION	
10:00 – 11:00	INAUGURAL SESSION	
	Chair:	C.R. Muthukrishnan, Deputy Director, IIT Madras, India
10:00 – 10:10	Welcome	R. Rajagopalan, Director, IOI India
10:10 – 10:25	Introduction to the Conference	John Kurien, Fellow, Centre for De- velopment Studies, India and Founder Member, ICSF
10:25 – 10:35	Presidential Remarks	C.R. Muthukrishnan, Deputy Director, IIT Madras, India
10:35 – 10:50	Inaugural Address	Nita Chowdhury, Chairperson, Indian Ocean Tuna Commission (IOTC) and Joint Secretary, Dept. of Animal Hus- bandry and Dairy Development, Min- istry of Agriculture, Government of In- dia
10:50 – 10:55	Message to the Conference	Ambassador Satya N. Nandan, Secre- tary General, International Seabed Au- thority, Jamaica (to be read out)
10:55 – 11: 00	Vote of Thanks	Nalini Nayak, Founder Member, ICSF, India
11:00 – 11: 15	Tea Break	
11:15 – 12:15	KEYNOTE SESSION	

	Chair:	V. Vivekanandan, Chief Executive, South Indian Federation of Fishermen Societies (SIFFS), India and Founder Member, ICSF
11:15 – 11:45	Keynote Address: <i>Ocean Governance and the Fishing Village</i>	Elisabeth Mann Borgese, Founder and Honorary Chairperson, IOI (Address to be read out by R. Rajagopalan, Director, IOI India)
11:45 – 12:30	Presentation: <i>Indian Ocean Fishing Communities: Sculpting a Vision</i>	Maizan Hassan Maniku, Former Director General of Fisheries Research, Maldives
12: 30 – 14:30	Lunch Break	
14:30 – 17:30	SETTING THE SCENE	
Session 1	Chair:	Harekrishna Debnath, Chairperson, National Fishworkers' Forum, India
14:30 – 15:00	<i>Excerpts from Indian Ocean 2001: a CD on fisheries in Indian Ocean countries</i>	Ramya R, ICSF, India, and Satish Babu, InApp, U.S.
15:00 – 15:15	Discussion	
Session 2	Chair:	Mucaï Muchiri, Head, Fisheries Department, Moi University, Kenya
15:15 – 15:35	<i>Ecosystem Considerations for Managing Fisheries in the Indian Ocean</i>	E. Vivekanandan, Senior Scientist, Central Marine Fisheries Research Institute (CMFRI), India
15:35 – 15:55	<i>International Instruments for Managing Fisheries in the Indian Ocean</i>	Rolf Willmann, Senior Fisheries Planning Officer, Food and Agriculture Organization of the United Nations (FAO), Rome
15:55 – 16: 15	Discussion	
16.15 – 16:30	Tea Break	
Session 3	Chair:	Joseph Rondolph Payet, Resource Manager, Seychelles Fishing Authority, Seychelles
16:30 – 16:50	<i>IOR-ARC Fisheries Programme for the Indian Ocean</i>	D. Dusoruth, Indian Ocean Rim Association for Regional Co-operation (IOR-ARC) (Address to be read out.)

16:50 – 17:10	<i>Fisheries Policy of the Southern African Development Community in the Indian Ocean Region</i>	Simeao Lopes, Director, Instituto de desenvolvimento de Pesca de Pequena escala (IDPPE), Mozambique
17:10 – 17:30	Discussion	
Day 2	Wednesday, 10 October 2001	
CONCURRENT WORKING GROUPS (WGs)		
9:00 – 16:30	Theme 1: <i>Transborder Issues Involving Fishworkers and Fishing Vessels: Arrangements for Resolving Conflicts</i>	Participants from India, Seychelles, Sri Lanka, Pakistan, Australia, and Maldives
	Chair:	V. Vivekanandan, Chief Executive, SIFFS, India and Founder Member, ICSF
	Rapporteurs:	A. J. Vijayan, Independent Fisheries Researcher, India, and Sebastian Mathew, Executive Secretary, ICSF, India
	<i>Transborder Movement of Fishermen Between India and Sri Lanka: Policy Considerations</i>	V. Vivekanandan, Chief Executive, South Indian Federation of Fishermen Societies (SIFFS), India
	<i>Transboundary Movement of Fishers: The Case of Sri Lanka</i>	Herman Kumara, National Convener, National Fisheries Solidarity (NAFSO), Sri Lanka
	<i>Transboundary Movement of Fishers: The Case of Pakistani Fishers</i>	Muhammad Ali Shah, Chairperson, Pakistan Fisherfolk Forum, Pakistan
	<i>The Elusive Line That Reduces Fishworkers to Mere Numbers</i>	Souparna Lahiri, Centre for Education and Communication, India
	<i>Preventing Illegal Fishing in Seychelles EEZ: The Role of Seychelles Fishing Authority</i>	Joseph Rondolph Payet, Resource Manager, Seychelles Fishing Authority, Seychelles
	<i>Illegal Fishing in Seychelles: The Human Dimension</i>	Albert Nicholas Napier, National Director, Seychelles Seamen Association, Seychelles
	<i>Threat to the Natural Resources of Small-scale Fishermen of North Sulawesi</i>	Ronald Titahelu, Doctor in Law, Sam Ratulangi University, Indonesia

9:00 – 16:30	Theme 2: <i>Sustaining Coastal Commons: Protecting the Right to Life and Livelihood of Fishing Communities</i>	Participants from Tanzania, Seychelles, Madagascar, Bangladesh, South Africa, Mozambique, India, Kenya, Indonesia and Thailand
	Chair:	John Kurien, Fellow, Centre for Development Studies, Trivandrum, India, and Founder Member, ICSF
	Rapporteurs:	Ahana Laxmi, Independent Researcher, India, and Chandrika Sharma, ICSF, India
	<i>Illegal Fishing: The Case of Mozambique</i>	Simeao Lopes, Director, Instituto de desenvolvimento de Pesca de Pequena escala (IDPPE), Mozambique
	<i>Dilemma of Small-Scale Fishers at the Dawn of Industrial Fishing in Kenya</i>	S. Mucai Muchiri, Head, Fisheries Department, Moi University, Kenya
	<i>Status and Trends of Tanzania's Marine Artisanal Fisheries</i>	Narriman S. Jiddawi, Institute of Marine Science, Tanzania
	<i>Allocation of Fishing Rights: Artisanal vs Industrial Fisheries</i>	Andrew Johnston, Chairperson, Artisanal Fishers Association, South Africa
	<i>Traditional Fisheries in Madagascar</i>	Felix Randrianasoavina, Executive Secretary, Collectiv of Malagasy Maritime Organizations (COMM), Madagascar (to be presented by Brian O' Riordan)
	<i>Coastal Area Degradation in Southern Thailand</i>	Pisit Charnsnoh, Yadfon Association, Thailand
	<i>Coastal Resource Degradation and User-Right Abuse in Bangladesh</i>	Prosanta Kumar Roy, Senior Assistant Secretary, Ministry of Establishment, Bangladesh
	<i>Coastal Area Degradation on the East Coast of India: Impact on Fishworkers</i>	Venkatesh Salagrama, Director, Integrated Coastal Management, India
	<i>Multi-use Conflicts: The Case of Maharashtra, India</i>	Ram Bhau Patel, National Fishworkers' Forum (NFF), India
	<i>Fisheries Management: Is Certification a Tool?</i>	Krishna Kumar, Marine Programme, WWF-India
10:30 – 10:45	Tea Break	
10:45 – 12:30	WORKING GROUPS (contd.)	

12:30 – 15:00	Lunch Break	
15:00 – 16:30	WORKING GROUPS (contd.)	
16:30 – 16:45	Tea Break	
16:45 – 18:00	PLENARY: PRESENTATION OF GROUP REPORTS AND DISCUSSION	
	Chair:	R. Rajagopalan, Director IOI India
19:30 – 20:30	Carnatic Music: Flute Recital. Venue: Central Lecture Theatre, IIT	K. Bhaskaran and Party
Day 3	Thursday, 11 October 2001	
09:00 – 13:00	PLENARY: PREFERENTIAL ACCESS TO RIPARIAN STATES IN INDIAN OCEAN FISHERIES	
Session 1	Chair:	Oscar Amarasinghe, Senior Lecturer, University of Ruhuna, Sri Lanka
09:00 – 09:20	<i>Mediating Transborder Problems of Fishworkers in the Bay of Bengal Region: What Can BOBP Do?</i>	Y. S. Yadava, Inter-Governmental Organization Co-ordinator, Bay of Bengal Programme (BOBP), Chennai, India
09:20 – 09:30	Discussion	
Session 2	Chair	Maizan Hassan Maniku, Former Director General of Fisheries Research, Maldives
09:30 – 10:00	<i>EU Interventions in the Fisheries Sector in the Indian Ocean: A Passport for Equity or a Road to Hell Paved with Good Intentions?</i>	Beatrice Gorez, Co-ordinator, Coalition for Fair Fisheries Arrangements (CFFA), Brussels, Belgium
10:00 – 10:30	<i>Conditions of Work on Board Non-riparian Fishing Vessels in the Indian Ocean</i>	Jean-Marc Barrey, Representative, Syndicat Maritime Bretagne (CFDT), France
10:30 – 11:00	Discussion	
11:00 – 11:15	Tea Break	
Session 3	Chair	Rolf Willmann, Senior Fisheries Planning Officer, FAO
11:15 – 11:45	<i>Economic and Social Implications of Multi-day Fishing Boats of Sri Lanka</i>	Oscar Amarasinghe, Senior Lecturer, University of Ruhuna, Sri Lanka

11:45 – 12:15	<i>Exploitation of Fisheries Resources in the Indian Ocean: Riparian and Non-riparian Dimensions</i>	Sebastian Mathew, Executive Secretary, ICSF
12:15 – 13:00	Discussion	
13:00 – 15:00	Lunch Break	
15:00 – 16:30	PLENARY: THE CONCERNS OF COASTAL COMMUNITIES AND MANAGEMENT OPTIONS – TOWARDS A SHARED VISION	
	Chair	John Kurien and V. Vivekanandan, Founder Members, ICSF
15:00 – 16:30	PLENARY (Contd.)	
18: 45 – 19:45	Dinner	
20:00 – 21: 00	Traditional Folk Dance: at: Central Lecture Theatre, IIT	DakshinaChitra Dance Group: <i>Oyilattam</i> and <i>Devarattam</i> . Directed by V. R. Devika
Day 4	Friday, 12 October 2001	
8.30 – 16:30	FIELD VISIT	
	To fishing communities in Chennai district: Chinna Neelangarai, Injambakkam and Semmencheri Kuppam	Field Guides: P.V. Ramamoorthy, Retd. Jt. Director of Fisheries, and V. Ramamoorthy, Retd. Dy. Director of Fisheries, Government of Tamil Nadu
Day 5	Saturday 13 October 2001	
09:00 – 10:30	PLENARY: ADOPTION OF THE CONFERENCE VISION STATEMENT	
	Chair:	Nalini Nayak, Founder Member, ICSF
10:30 –11:00	Tea Break	
11:00 – 12:00	VALEDICTORY SESSION	
	Chair:	Pierre Gillet, Founder Member, ICSF
11:00 – 11:10	Address	R. Natarajan, Director, IIT Madras
11:10 – 11:25	Presentation of the Vision Statement	Chandrika Sharma, ICSF
11:25 – 11:40	Valedictory Address	P. Rajendran, Secretary to Government, Animal Husbandry and Fisheries Department, Tamil Nadu, India

11:40 – 11:50	Vote of Thanks	S.P. Subramanian, Associate Head, IOI India
12:00	Lunch	Taramani Guest House

**INTERNATIONAL COLLECTIVE IN SUPPORT OF FISHWORKERS (ICSF)
INTERNATIONAL OCEAN INSTITUTE (IOI)**

Conference Theme:
Forging Unity: Coastal Communities and the Indian Oceans Future

Venue:
Indian Institute of Technology, Chennai, India, 9–13 October, 2001

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Coastal Area Profiles of Selected Countries in the Indian Ocean Region

Background Information

Note

The material in this document, a work in progress, has been compiled from different sources, including the World Wide Web. We welcome your contributions, advice and suggestions on how this exercise should be carried forward.

1 Australia

1.1 Primary indicators

Geographical co-ordinates	10° 41' to 43° 39' S and 113° 09' to 153° 39' E
Length of the coastline	66,530 km (12,500 km western Australia bordering Indian Ocean)
Population within 100 km from the coast	89.8 %
Shelf area	2.065 mn sq km
Number of fishers	15,800
Percentage of population dependent on fishing	0.08%
Population dependent on fisheries	79,000 (approx.)
Contribution of fisheries to GDP	0.163%

1.2 Coastal ecosystem

Australia has an EEZ of over 11 mn sq km, one of the largest in the world. It has high marine biodiversity, with two major bioregions—the tropical north (Indo-Pacific) and the temperate south. There are nine major habitats and ecosystems, including estuaries, high energy sand and rocky beaches, coastal salt marshes, mangroves, seagrass beds, temperate reefs, tropical coral reefs, benthic sea floor communities and open-water pelagic communities. Australia has the largest areas of coral reefs and seagrasses and the third largest area of mangroves in the world. The total area under mangroves is 11,500 sq km of which 2,544 sq km is protected. Southern Australia has the largest areas of temperate seagrasses in the world and the highest diversity of seagrass and marine algae.

1.3 *Threats to the coastal ecosystem*

1.3.1 *Pollution*

Marine pollution from domestic, industrial and agricultural sources poses a serious threat to marine biodiversity in Australian waters:

- Hydrocarbons are key pollutants, originating from shipping, from accidents in offshore petroleum exploration and from storm-water runoff, storm water being the most damaging.
- Waste from aquaculture operations is also contributing to increased nutrient loads in coastal waters.
- Australia's beaches are increasingly littered with plastic bottles, bags, fishnets and fishing lines, posing a threat to marine life.

1.3.2 *Degradation of natural habitats*

- Global warming is affecting coral reefs in Australia. The last major bleaching episode occurred in 1998, when 87 per cent of inshore reefs of the Great Barrier Reef were affected by bleaching to some extent.
- Non-native species introduced through ballast waters are posing a serious threat to indigenous marine ecosystems.
- Several of Australia's fisheries are considered fully fished, while a few such as southern bluefin tuna and eastern gemfish are classified as overfished.
- A large proportion of coastal and nearshore habitats (mangroves, salt marshes, wetlands) have been either destroyed or significantly modified by impacts from other sectors. The construction of structures like breakwaters, seawalls associated with ports, harbours and canal estates have affected coastal salt marshes and wetlands, coral growth and, ultimately, fisheries productivity.

1.4 *Legislation of relevance to coastal management*

Under the Coastal Waters (State Title) Act, 1980, each of the States has, in effect, the same general power in the marine area to 3 nautical miles from the territorial sea baseline.

1.5 *Other relevant legislation*

- Environment Protection and Biodiversity Conservation Act, 1999
- Environment Protection and Biodiversity Conservation Regulations, 2000
- Marine Parks Act, 1997
- Marine Park Regulations, 1999 under the Marine Parks Act, 1997
- Great Barrier Reef Marine Park Act, 1975
- Environmental Protection (Sea Dumping) Act, 1981
- The Protection of the Seas (Prevention of Pollution from Ships) Act 1983
- Protection of the Sea (Powers of Intervention) Act 1981
- Protection of the Sea (Civil Liability) Act 1981
- The Petroleum (Submerged Lands) Act 1967
- Ocean Policy (1998)

The Commonwealth Coastal Policy of 1995 contains a number of initiatives to assist integrated decisionmaking and the development of long-term strategic responses to coastal problems. The core of these initiatives is a programme to develop integrated coastal area management strategies and a programme (which is referred to as Coastcare) based on partnerships between the three spheres of government (the Commonwealth, State and Local), the community and industry. In the policy, for the purpose of the actions of the Commonwealth, the boundaries of the coastal zone are considered to extend as far inland and as far seaward as necessary to achieve the Coastal Policy objectives, with a primary focus on the land-sea interface. This means that, although the coastal zone includes terrestrial and marine areas, the initiatives in this Policy have not been developed to deal with all issues associated with catchment and marine management.

1.6 *International agreements related to the coastal environment*

Australia is a party to:

- The United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- United Nations Conference on Straddling Stocks and Highly Migratory Fish Stocks
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal.

1.7 *Marine protected areas (MPAs)*

Australia leads the world in using MPAs as a tool for marine conservation and management. The country has around 310 MPAs, covering a total area of around 0.75 mn sq km. This is 24 per cent of the total number of MPAs in the world. Over 7 per cent of Australia's marine environment has been declared as MPAs. A large proportion is within a single MPA—the Great Barrier Reef Marine Park.

2 **Bangladesh**

2.1 *Primary indicators*

Geographic co-ordinates	20° 34' to 26° 38' N and 88° 04' to 26° 38' E
Length of the coastline	Approx. 480 km
Shelf a (up to 200 mts depth)	66,400 sq km
Population living within 100 km from the coast	54.8%
Number of fishers	1,444,960
Percentage of population dependent on fishing	1.08%
Population dependent on fisheries	7,224,800 (approx.)
Contribution of fisheries to GDP	4%

2.2 Coastal ecosystem

Bangladesh is washed by the Bay of Bengal in the south. Most of the country is low-lying and the influence of the sea is felt even in inland areas. Bangladesh is highly vulnerable to cyclonic storms and tidal waves that form over the Bay of Bengal. The Bangladesh coastline is dominated by mangrove and estuarine ecosystems. In fact, the country has the largest continuous block of mangrove forests in the world, with an area of 5,767 sq km. The main expanse, called the Sundarbans, is a swampy, saline ecosystem crisscrossed by waterways. The offshore island of St. Martin is the only island that has aggregations of corals along with seagrass beds and soft coral habitats. Bangladesh also has one of the longest beaches in the world—the Cox's Bazaar beach, about 145 km in length. Climate changes and the resultant rise in sea level are expected to have devastating consequences for this low-lying country.

2.3 Threats to the coastal ecosystem

2.3.1 Pollution

- The numerous rivers that run across the country carry pollutants from the entire drainage area, including Bangladesh and parts of Nepal, India, Bhutan and China. Pollutants include industrial and domestic wastes, agrochemical residues and pollutant discharges from ships and boats. Major polluting industries include textiles, steel, shipbreaking, asbestos, leather tanneries, pharmaceuticals, fertilizers, insecticides and pesticides.
- Other sources of pollution include untreated domestic sewage and fertilizers and pesticides used in agricultural operations that ultimately find their way to the sea.
- Oil pollution as a result of tanker traffic and transshipment operations in the Chittagong and Mongla port areas has also contributed to the pollution of the coastal ecosystem.

2.3.2 Degradation of natural habitats

- Mangrove forests have been cut for use as fuelwood and timber and also to make way for the rapid growth of the shrimp aquaculture. Mangroves have also been affected by increased siltation and sedimentation as well as by the reduction inflow of fresh water due to the construction of dams on rivers and the construction of embankments, dykes and other structures for control of floods and tidal waves. The resultant salinity increase has affected mangrove growth.
- The construction of flood control structures, coastal embankments, etc. have interfered with natural hydrological processes and the floodplain ecology of the country.
- The use of destructive gear and fine-meshed nets has affected the fisheries resource base, and there are clear indications of overfishing, especially in inshore areas.

2.4 Legislation of relevance to coastal management

Bangladesh has no legislation specific to the coastal zone. However, several laws have a bearing on resource use in the coastal zone. These include:

- Territorial Waters and Maritime Zones Act, 1974
- Environment Conservation Act, 1995
- Marine Fisheries Ordinance, 1983
- East Bengal Protection and Conservation of Fish Act, 1950
- Water Pollution Control Act, 1973
- Water Supply and Sewage Authority Ordinance, 1963

The National Environment Committee, the Executive Committee of the National Economic Council (ECNEC) and the Ministry of Environment and Forest are responsible for decisionmaking. The government agencies dealing with coastal and marine affairs include the Department of Forests, the Department of Fisheries, the Bangladesh Fisheries Development Corporation, the Department of Science and Technology, the Bangladesh Navy, the Directorate of Shipping, etc. There is, however, little co-ordination between these agencies. Implementation of environmental policy and enforcement of legislation is weak. The effectiveness of environmental programmes is also influenced by a paucity of resources.

A court ruling in 1997 declared the right to a healthy environment a fundamental right of the citizens of Bangladesh. According to the said ruling, "Articles 31 and 32 of our Constitution protect right to life as fundamental right. It encompasses within its ambit, the protection and preservation of environment, ecological balance free from pollution of air and water, sanitation without which life can hardly be enjoyed. Any act or omission contrary thereto will be violative of the said right to life."

2.5 International agreements related to the coastal environment

Bangladesh is a party to:

- United Nations Framework Convention on Climate Change (UNFCCC)—ratified
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)—ratified
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- Convention on Biological Diversity (CBD)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal
- The International Convention on Civil Liability for Oil Pollution Damage (CLC)
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)—not ratified

3 India

3.1 Primary indicators

Geographic co-ordinates	8° 4' to 37° 6' N and 68° 7' to 97° 25'
Length of the coastline	8,118 km
Shelf area (up to 200 mts depth)	0.5 mn sq km
Population living within 100 km from the coast	26.3%
Number of Fishers	5,958,744
Percentage of population dependent on fishing	0.58%
Population dependent on fisheries	29,793,720 (approx.)
Contribution of fisheries to GDP	1.3%

3.2 *Coastal ecosystem*

The eastern coast of India is low-lying, with lagoons, marshes, beaches and deltas, while rocky shores dominate the western coast. The coastal ecosystem comprises coastal wetlands, coral reefs (area of 2,300 sq km), mangroves (area of 6,700 sq km, of which 1,506 sq km is protected), lagoons and estuaries. Extensive seagrass beds are found in southern India. There is relatively poor reef growth on the west coast of India, except in the Gulf of Kachchh region. Reef growth becomes more vigorous towards the southern tip of India and around the coast of Sri Lanka.

3.3 *Threats to the coastal ecosystem*

3.3.1 *Pollution*

- The coastal waters off the Indian coast are exposed to pollution from various sources—inland, coastal, offshore and atmospheric. Major pollutants include:
 - industrial wastes from leather tanneries, mining, textiles, chemical and other industries;
 - sewage from urban centers;
 - fertilizers and pesticides from agricultural operations; and
 - pollution due to oil exploration and mining, oil refining and transportation, oil spills and bilge discharge from ships, etc. Shipbreaking yards are also highly polluting.

3.3.2 *Degradation of natural habitats*

- Mangrove forests have been cleared for aquaculture farms and also for use as firewood and timber. Mangrove habitats have also been affected by increased sedimentation and salinity increase in coastal areas, a consequence also of the reduced freshwater supplies brought about by construction of dams and groundwater mining.
- Coastal wetlands and mangroves have been reclaimed in many parts of the country.
- Coral reef formations have been exploited for saleable products and affected by pollution, sedimentation and tidal wave action.
- Overfishing and the use of destructive gear has led to the depletion of almost all important species in Indian coastal waters.

3.3.3 *Coastal erosion*

Parts of the Indian coastline, especially along the States of Kerala and Karnataka, are vulnerable to erosion, a problem often aggravated by the construction of poorly designed coastal protection structures.

3.4 *Legislation of relevance to coastal management and status of implementation*

India is one of the few countries in the region with a specific legislation for the protection of the coastal zone. The Coastal Regulation Zone (CRZ) Notification, 1991, was issued under the provisions of the Environment (Protection) Act 1986. Other relevant legislation include:

- The Environment Protection Act, 1986
- The Environmental Impact Assessment Notification, 1994
- Wildlife Protection Act, 1972
- The Water (Prevention and Control of Pollution) Act, 1974

- Merchant Shipping Act, 1964
- Indian Forest Act, 1927
- Forest Conservation Act, 1980
- The Air (Prevention and Control of Pollution) Act, 1981
- Panchayati Raj Act

The CRZ Notification defines the coastal stretches of seas, bays, estuaries, creeks, rivers and backwaters, which are influenced by tidal action in the landward side, up to 500 m from the High Tide Line (HTL) and the land between the Low Tide Line (LTL) and the HTL, as the CRZ. The CRZ has been classified into four categories for the purpose of regulating development activities. Maximum restrictions for regulating development and construction activities apply to the ecologically sensitive areas of CRZ-I.

The following are some of the shortcomings identified in the CRZ Notification:

- It aims at regulating activities only within a narrow coastal strip, and does not consider the links between activities in inland and offshore areas that affect the coastal environment in a significant way.
- It completely lacks a seaward component.
- It fails to make provision for stakeholder and public participation at the State level.

The implementation of the Notification has been slow and inadequate. However, it has been used by environmental and fishworker groups to draw attention to harmful developments in the coastal zone. A case in point is the public interest litigation filed in the Supreme Court of India against shrimp aquaculture activities in the coastal zone. The Court ruled: “No shrimp culture farm can be set up within the Coastal Regulation Zone (CRZ) as per the CRZ Notification dated February 19, 1991 issued by the Ministry of Environment and Forests”.

However, there have been subsequent efforts by the government to dilute the provisions of this Notification to make shrimp aquaculture a permitted activity in the CRZ. The Aquaculture Authority Bill, drafted by the Agriculture Ministry and passed by the Rajya Sabha in 2000, seeks to clarify that aquaculture is not a prohibited activity within the meaning of said notification.

3.5 *Marine protected areas*

There are five protected areas declared in India—they are the Gulf of Mannar, Gulf of Kachchh, Wandor, Great Nicobar Biosphere Reserve and Rani Jhansi Marine National Park in the Andamans. Besides this, there are a number of sanctuaries declared all along the coast. India has several national parks with minimal management.

3.6 *International agreements related to the coastal environment*

India is a party to:

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal
- International Convention on Civil Liability for Oil Pollution Damage 1969.
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)

4 Indonesia

4.1 Primary indicators

Geographic co-ordinates	92° E to 141° E and 7° 20' N to 14° S
Length of the coastline	81,000 km
Shelf area	1,713,000 sq km
Population living within 100 km of the coast	95.9%
Number of fishers	4,668,482
Percentage of population dependent on fishing	2.15%
Population dependent on fisheries	23,342,410 (approx.)
GDP from agriculture sector	16.1%

4.2 Coastal ecosystem

Indonesia is the world's largest archipelagic State, comprising over 17,000 islands. Its marine ecosystem is highly diverse and productive. Indonesia is divided into two distinct ecological areas—the islands making up the western archipelago, including Sumatra, Java, Kalimantan and Bali, and those located off the Sunda Shelf to the east of Australia, including Sulawesi, Maluku, Irian Jaya and Eastern Sunda Islands.

Indonesia has extensive coral reefs, representing the most significant reef resource in Southeast Asia. There are over 500 species of coral. Rocky and sandy shores and coral islands characterize the marine ecosystem of western Sumatra. There are approximately 50,000 sq km of coral reefs in western and central Indonesia, slightly more than half of the estimated 85,000 sq km total reef area in Indonesia.

Indonesia has vast tracts of mangroves forests (4.25 mn ha). Mangrove forests were common along most of the low-gradient coastlines of the Sunda shelf. Western Indonesia once accounted for 51 per cent of Indonesian mangrove forests, but widespread clearing for wood pulp, aquaculture, agriculture and plantations has reduced mangrove cover in western Indonesia by approximately 60 per cent.

4.3 Threats to the coastal ecosystem

4.3.1 Pollution

- Agricultural runoff from chemical fertilizers applied to rice fields ultimately drain into coastal waters.
- Mining activities cause increased turbidity and heavy metal contamination of coastal waters.
- Marine debris from land-based urban sources and from shipping and fishing vessels has led to floating garbage.
- Dumping of industrial wastes, as from tanneries, and the food processing and textile industries, are major contributors to coastal pollution. Marine pollution in western Indonesia is concentrated around the industrial cities/ complexes of Batam, Padang, Medan, Palembang, Balikpapan, Jakarta, Semarang and Surabaya.
- Domestic sewage is a major source of organic pollution. Large volumes of sewage are released, for example, into Jakarta's rivers and coastal waters each day.

4.3.2 *Degradation of natural habitats*

- Off Java and Sumatra, reefs are damaged by overexploitation, sedimentation and organic pollution. Coral mining poses a significant threat to the coral reefs of the country. Coral reefs have also been affected by destructive fishing practices like blast and cyanide fishing. Reef ecosystems are in relatively better shape in the far east and northeast.
- Mangrove forests, especially in the western part of the country, have been depleted by illegal cutting, coastal development and land-based pollution. Mangroves in the east are less impacted.
- The conversion of intertidal zones to rice paddy (*sawah*) are threatening the salt marsh and mangrove ecosystems.
- Land reclamation for purposes of urbanization has led to coastal subsidence and flooding.

4.4 *Legislation of relevance to coastal management*

Indonesia has no legislation specific to coastal area management. Legislation relevant to this issue include:

- Environment Management Act, 1997
- Government Regulation of the Republic of Indonesia regarding Environmental Impact Assessment (No. 51 of 1993)
- Government Regulation of the Republic of Indonesia concerning the Control of Water Pollution (No. 20 of 1990)
- Government Regulation No. 7 of 1973 regarding Control on the Distribution, Storage and use of Pesticides
- Decree of the State Minister for Environment No. KEP-14/MENLH/1994 on General Guidance for drawing up the Analysis of Impact on the Environment
- Decree of the State Minister of Environment No. KEP-12/MENLH/3/1994 on the General Guidance for Environmental Management and Monitoring Efforts
- Government Regulation of the Republic of Indonesia regarding Hazardous and Toxic Waste Management (No. 19 of 1994)

The Environmental Impact Management Agency (BAPEDAL) in Indonesia, a non-departmental government agency has developed a marine and coastal pollution control programme to address negative impacts on the coastal and marine environment. The programme includes pollution control in seaports, tourist beaches, and in-tanker service zones in the Malaya Strait, Macassar Strait and Lombok Strait (Indonesia, 1995).

Several Integrated Coastal Zone Management programmes have been introduced in Indonesia. Besides this, Indonesia also has coastal management programmes with regional organization like UNEP, (The East Asian Sea Management Plan).

4.5 *International agreements related to the coastal environment*

Indonesia is party to:

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- International Convention on Civil Liability for Oil Pollution Damage 1969.
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal—accepted but not ratified.

4.6 *Marine protected areas*

Indonesia's MPAs are divided into four types: strict nature reserves, wildlife reserves, national parks and recreation parks. Existing protected areas total around 2.7 m ha, and the majority is in eastern Indonesia. MPAs are selected according to eight criteria: diversity, naturalness, representativeness, uniqueness, rareness, size, accessibility and effectiveness.

5 Kenya

5.1 *Primary indicators*

Geographical co-ordinates	5° 40'N to 4° 4'S and 33° 50'E to 41° 45' E
Length of the coastline	608 km
Continental shelf area	8500 sq km
Population living within 100 km from the coast	7.6%
Number of fishers	43,488
Percentage dependent on fishing	0.13
Population dependent on fisheries	217,440 (approx.)

5.2 *Coastal ecosystem*

There are eight coastal provinces in Kenya. The country has a narrow continental shelf, with depths dropping below 200 m within less than 4 km in most places. The coastal ecosystem comprises coastal forests and bushland, sandy beaches, grasslands, estuaries, wetlands, mangroves, seagrass beds, seaweeds and coral reefs. Kenya's coral reefs are divided between two main areas the southern, almost continuous fringing reef system from Malindi to Shimoni (a distance of approximately 200 km), and the more broken-up patches around the islands of the Bajuni Archipelago, from Lamu and northwards, a distance of approximately 100 km. Mangrove forests cover approximately 530 sq km. Two major rivers drain into the coastal waters.

5.3 *Threats to the coastal ecosystem*

5.3.1 *Pollution*

- Disposal of industrial wastes into coastal waters from industries concentrated mainly around Mombasa, is highly polluting.
- Increasing pollution from domestic sewage and solid waste is the most severe pollution challenge in coastal Kenya. Solid wastes from household rubbish and industrial waste materials, including plastic items, often find their way into the sea with storm water. Wastes from tourist beach hotels are known to be polluting.

- Oil pollution due to the high volume of ship and tanker traffic that passes through the region is a threat to the marine environment.
- The use of chemicals and fertilizers in agriculture, though still limited, is on the increase.

5.3.2 *Degradation of natural habitats*

Mangroves are being cleared for construction of aquaculture ponds or for salt production. Mangroves are also being affected by pollution and sedimentation. Coral reefs are under threat from pollution and the siltation caused by deforestation and destructive agricultural practices. For example, the silt load of over 3 mn tonnes per year transported by the Tana river in Kenya, has destroyed corals and seagrasses. Coral reefs are also being destroyed by overfishing and destructive fishing techniques (dynamite fishing, poison and encircling nets), as well as by collection of aquarium tropical fishes, corals, shells, etc. for tourist and commercial purposes. The El-Niño Southern Oscillation (ENSO) had a severe impact on coral reefs in 1997–98. There is overfishing, both in inshore areas and in offshore areas by foreign fleets, largely due to a lack of surveillance and enforcement capacity.

5.3.3 *Coastal erosion*

The Kenyan coastline is vulnerable to coastal erosion. Several of the famous tourist beaches in the country are showing severe signs of erosion, forcing tourist hotels to construct seawalls to combat the problem.

5.4 *Legislation of relevance to coastal management*

The Coast Development Authority Act provides for the establishment of the Coast Planning Authority (CDA) to plan and co-ordinate the implementation of development projects in the whole of the coastal province and the EEZ.

Other related Acts are:

- Government Fisheries Protection Act (Cap 379)
- Fish Industry Act (Cap 378)
- Merchant Shipping Act (Cap 389)
- Wildlife Conservation and Management Act (Cap 376)
- Maritime Zones Act
- The Continental Shelf Act (Cap 312)
- The Fisheries Act (chapter 378)
- Land Planning Act (Cap 303)
- Town Planning Act
- Local Authority Government Act (Cap 265)
- The Water Act (Cap 732)
- Agriculture Act (Cap 318)
- Forestry Act (Cap 385)

In Kenya, integrated coastal area management is being undertaken on a project basis, requiring co-ordination between the CDA and the Kenya Marine Fisheries Research Institute (KMFRI), the Kenya Wildlife Service, the Fisheries Department, the Public Health Department, as well as with other stakeholders. The co-ordination role of the CDA is made less effective by the lack of an appropriate legislative framework with enforceable policies, regulations and laws. Mechanisms to enforce compliance as well as local institutional capacity are still weak.

5.5 International agreements related to the coastal environment

Kenya is party to:

- The United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal
- International Convention on Civil Liability for Oil Pollution Damage 1969.

Kenya is a partner to the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities.

5.6 Marine protected areas

The MPA system is centrally managed by an independent parastatal, the Kenya Wildlife Service (KWS), as either parks (fully protected) or reserves (traditional extraction allowed), and covers over 5 per cent of the coastline. The well-established marine parks and reserves in Malindi/Watamu (park and reserve, established 1968), Mombasa (park and reserve, established 1989) and Kisite/Mpunguti (park and reserve, established 1978) are primarily oriented at conservation and tourism use, with significant monitoring and research in the last 15 years.

6 Madagascar

6.1 Primary indicators

Geographic co-ordinates	11° 57' to 25° 30' S and 43° 14' to 50° 27' E
Length of the coastline	5,096 km
Population living within 100 km from the coast	55.1%
Number of fishers	142,666
Percentage of population dependent on fishing	0.98
Population dependent on fisheries	713,330 (approx.)

6.2 Coastal ecosystems

Madagascar, situated in the southern Indian Ocean, has an estimated mangrove forest cover of 3,300 sq km in the coastal zone, 98 per cent of which is situated on the west coast. About 70 per cent of the mangroves are in large stands exceeding 500 ha, with the remainder in scattered small patches. Mangrove area under protection is only 6 sq km. Lagoons, situated on the east coast, cover a total surface area of 60,000 sq km. Coral reefs occur as emergent fringing and barrier reefs, patch reefs and submerged banks and shoals. They extend for a distance of 1,000 km though their distribution is discontinuous.

6.3 *Threats to the coastal ecosystem*

- Pollution.
- Untreated domestic waste.
- Industrial pollution from oil refineries, mines, etc.
- Fertilizer runoff from sugarcane plantations.

6.3.1 *Degradation of natural habitats*

Corals have been affected by coral mining for construction and for tourist souvenirs. They have also been affected by sedimentation.

6.3.2 *Coastal erosion*

Coastal erosion is a result of natural factors such as shifting rivers, channels, tides and cyclones, as well as anthropogenic factors, including port construction and channel modification.

6.4 *Legislation of relevance to coastal management*

In Madagascar, Law 96-025 provides for local management of renewable resources by transferring the management of renewable natural resources, under contract, to rural communities. The management of forests, wild fauna and flora (both aquatic and terrestrial), water and rangeland coming within the State domain or territorial communities can thus be handed over to local entities. The Law creates a regulatory framework for security in local resource management contracts. Such contracts are entered into by the State, along with the commune or the base rural community. A contract provides for the transfer of the management of a renewable natural resource within a demarcated community area to a given rural community.

The Environmental Charter of 1990 (Law 90-033) provides for obligatory Environmental Impact Assessment (EIA) of investment projects liable to affect the environment.

6.5 *International agreements related to the coastal environment*

Madagascar is a party to:

- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- The United Nations Framework Convention on Climate Change (UNFCCC)
- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal
- International Convention on Civil Liability for Oil Pollution Damage 1969.

6.6 *Marine protected areas*

There are two protected areas, both of which are in the northeast. The Mananara Nord, a biosphere reserve with terrestrial, intertidal and marine components, includes the islands of Nosy Atafana and surrounding reefs. There are three marine reserves (Tampolo, Cap Masoala and Tanjona), which forms a part of the Masoala National Park. The Nosy Atafana is effectively protected and is closed to all fishing activities. Besides this initiative, there are customary management practices of the coastal people, such as *dina*, which is now legally recognized.

7 Malaysia

7.1 Primary indicators

Geographic co-ordinates	1° to 7°N and 100° to 120° E
Length of the coastline	4,400 km
Shelf area	418,000 sq km
Population living within 100 km from the coast	98%
Number of fishers	100,666
Percentage of population dependent on fishing	0.44 %
Population dependent on fisheries	503, 330 (approx.)
Contribution of fisheries to GDP	1.47 %

7.2 Coastal ecosystem

The Malaysian coast consists of sandy shores interspersed with rocky coasts, mangrove-lined estuaries and lagoons, river deltas, seagrass beds and sheltered tidal flats. The shallow seas support coral reef communities around the offshore islands. The bulk of mangrove forests are found on the west coast. The total area under mangroves is about 6,424 sq km, of which 109 sq km is protected. Sarawak, the largest State of Malaysia, has a coastline of 1,400 km, nearly 30 per cent of Malaysia's total coastline.

7.3 Threats to the coastal ecosystem

7.3.1 Pollution

- The discharge of untreated sewage into the sea from urban centres, and of waste from pig farms, has led to considerable pollution of coastal waters.
- Contamination of coastal waters with heavy metals has been a consequence of industrialization. Agro-based industries like palm oil and rubber processing mills are also highly polluting.
- The widespread and indiscriminate use of pesticides in agricultural operations has contributed to coastal pollution.
- The high ship traffic near Malaysia leads to oil slicks or oil spills. It is estimated that between 1–5 tonnes of crude oil are discharged each day.

7.3.2 Degradation of natural habitats

- Seagrass beds are under threat from sand extraction and sedimentation.
- Coral reef degradation is partly a consequence of tourist activities. Coral reefs in the country also suffer from organic and sediment pollution and overexploitation.
- Mangrove forests have been cleared for aquaculture purposes. Mangroves have also been affected by organic and metal pollution and by sedimentation.
- Overfishing and the use of destructive fishing practices have affected the fisheries resource base.

7.4 *Coastal erosion*

Large parts of the Malaysian coastline have been exposed to coastal erosion, aggravated by degradation of natural habitats like mangrove forest, and other human-induced factors.

7.5 *Legislation of relevance to coastal management*

Malaysia has no specific legislation for coastal management. However, related legislation includes:

- Protection of Wildlife Act, 1972
- National Parks Ordinance, 1962
- Environmental Quality Act, 1974
- Fisheries Act, 1985
- Continental Shelf Act, 1966
- Exclusive Economic Zone Act (EEZ), 1984
- Port Authorities Act, 1963
- Maritime Regulations for Sabah, 1999
- Fisheries (Maritime) Sarawak Regulations, 1976
- Merchant Shipping (Oil Pollution) Act, 1994
- Waters Act, 1920
- Land Conservation Act, 1960

At the national level, coastal management activities are co-ordinated on a project or programme basis by the Office of the Prime Minister's Environment and Natural Resources Division. Various agencies are responsible for different aspects and, in 1992, an Inter-Agency Planning Group (IAPG) formulated a National Policy on Coastal Resources Management. The Seventh Malaysian Plan (for development from 1996 to the year 2000) provides for the development of a National Coastal Zone Management Policy (NCZMP) to specify principles and guidelines for the ecologically sustainable development of coastal areas. The NCZMP will complement the National Environmental Policy and associated Action Plan. Marine parks and prohibited fisheries have already been established under the Fisheries Act 1985. Under the Environmental Impact Assessment (EIA) Order of 1987 all large-scale development projects, such as port expansion and construction of resort facilities are required to prepare EIAs prior to project approval by the Department of Environment under the Ministry of Science, Technology and the Environment.

Problems in implementation include

- overlapping jurisdiction between the Federal and State Governments;
- inadequate monitoring; and
- paucity of funding for conservation and education activities.

7.6 *International agreements related to the coastal environment*

Malaysia is a party to:

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)

- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- Basel Convention on the control of Trans-boundary Movements of Hazardous Wastes and Their Disposal
- International Convention on Civil Liability for Oil Pollution Damage 1969

7.7 *Marine Protected Areas*

There are 38 protected areas in Malaysia.

8 **Maldives**

8.1 *Primary indicators*

Geographic co-ordinates	07°06'N to 00° 41'S and 72° 32'E to 73°45'E
Length of the coastline	644 km
Population living within 100 km from the coast	100%
Number of fishers	22,109
Percentage of population dependent on fishing	7.7%
Population dependent on fisheries	110,545 (approx.)
GDP from fisheries sector	11%

8.2 *Coastal ecosystem*

The archipelago comprises 26 natural atolls and some 1,120 islands, of which around 200 are inhabited. The marine ecosystem comprises sandy lagoons (*fallhu*), reefs (*faru*), atoll-lagoons (*etherevari*), and open-sea channels (*kandu*). The country owes its physical existence to the coral reefs, which provide the living base on which the fragile ecosystems are established. There are 187 coral species, with increasing diversity, from north to south. The country is considered to be extremely vulnerable to sea-level rise due to climate change and global warming.

8.3 *Threats to the coastal ecosystem*

8.3.1 *Pollution*

Waste disposal, in particular sewage and solid waste due to increased tourism activities, is threatening to lead to declines in coastal water quality.

8.3.2 *Degradation of natural habitats*

- Coral mining to meet the demands of the construction industry, especially tourism, has increased the vulnerability of coastal areas to tide and wave-induced erosion.
- El Niño has lead to coral bleaching leading to a 20 per cent loss of coral diversity.

- Global warming and the associated sea-level rise poses a serious threat to urban centres, populated atolls and tourist islands.
- The use of illegal fishing methods and destructive gear, though not very common, is threatening to lead to the depletion of some reef and lagoon fisheries.

8.3.3 Coastal erosion

Islands in Maldives are highly vulnerable to coastal erosion due to both natural and human-induced causes. The latter includes improper construction of groynes and other structures, increased exposure to wave action due to coral mining, etc. Reclamation of land due to increase in population, mainly along the reef edge, also leads to coastal erosion.

8.4 National legislation of relevance to coastal management

- National Environment Protection and Preservation Act of 1993
- Fisheries law of Maldives (No. 5/87)
- Law prohibiting disposal of waste into Northern Harbour of Malé, Law No 33/78
- Law on mining, aggregate from Malé coastal zone, Law No 34/78
- Law on prohibiting extraction of soil and coral from Malé, Law No 55/78
- Law on mining, coral, sand and aggregate, Law No 77/78
- National Environmental Action Plan 1989

Compared to other neighbouring countries, Maldives remains relatively free from urgent environmental problems. Most environmental initiatives have focused on coral reef conservation and management. A National Environmental Action Plan was drawn up in 1989.

The responsibility of all environment-related matters, and for the enforcement of the National Environmental Protection and Preservation Act, rests with the Ministry of Home Affairs, Housing and Environment (MHAHE). This Act makes mandatory an Environmental Impact Assessment (EIA) for any project that has a potential impact on the environment. The provisions of this Act, have, however, been poorly enforced. The scattered spread of the islands makes implementation difficult.

8.5 International agreements related to the coastal environment

Maldives is party to

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- United Nations Conference on Straddling Stocks and Highly Migratory Fish Stocks
- International Convention on Civil Liability for Oil Pollution Damage 1969 (CLC)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal (Accepted but not ratified)
- International Convention for the Prevention of Pollution from Ships (MARPOL 1973/ 78)—not signed.

8.6 Marine protected areas

The formation of protected areas started in mid-1990. There are 15 key dive sites, which form a part of the MPAs.

9 Mauritius

9.1 Primary indicators

Geographic co-ordinates	
Island of Mauritius	between 19°58' to 20°32'S and 57° to 57°46' E
Island of Rodriques	between 19° 45' S and 63 ° 25 '
Island of Agalega	between 10 ° 33 ' S and 56 ° 45 '
And St.Brandon Island	between 16 ° 23 ' S and 59 ° 27 '
Length of the coastline	322.5 km
Shelf area	1300 sq km
Population living within 100 km from the coast	100 %
Number of fishers	10,713
Percentage of population dependent on fishing	0.91%
Population dependent on fisheries	53,565 (approx.)
Contribution of agriculture to GDP	10 %

9.2 Coastal ecosystem

The State of Mauritius comprises the islands of Mauritius, Rodriques, St. Brandon and Agalega. Mauritius is a volcanic island with a mountainous topography. The coast is almost completely surrounded by a fringing coral reef system, enclosing 243 sq km of lagoon area into which 50 rivers and rivulets drain. There are three kinds of coral reefs around Mauritius—peripheral and sheltered fringing reefs, barrier reefs and lagoon patch reefs. Lagoon waters are generally shallow (2–3 m) and discontinuous, extending up to 8 km from the beach. Mangroves are limited to narrow belts mainly on the southeast coast, near river mouths or estuaries. Extensive and important seagrass beds of seven species types occur in lagoons. There is not much of a continental shelf and water depth reaches 3,000 m within 20 km of the coastline.

9.3 Threats to the coastal ecosystem

9.3.1 Pollution

- Industries like textiles and sugar mills release effluents in to the sea causing pollution.
- Stone-crushing plants produce dust and suspended particles, sludge and related waste, which contaminate rivers and lagoons.
- Sewage, solid wastes and waste water are released in to the sea.

- The high use of pesticides in sugarcane farming is highly polluting. Runoff from agricultural lands and plantations cause eutrophication (due to use of pesticides) and sedimentation and ultimately leading to reef degradation.

9.4 *Degradation of natural habitats*

- Coral reefs have been affected by destructive fishing methods like dynamite fishing, sedimentation, pollution and by coral mining.
- The coral reef ecosystem is also being affected by tourist activities like the collection and buying of shells and corals from shallow lagoons and marine parks. For example, black corals are allegedly being poached by tourists.
- Overfishing in inshore reef areas.
- Many mangrove stands have been felled to make way for hotels and roads.
- Coastal wetlands, particularly in northern and north-western Mauritius, have been reclaimed for purposes of tourism and urbanization, causing flooding in many of these areas.

9.5 *Legislation of relevance to coastal management*

The Environment Protection Act 1991 of Mauritius has specific provisions on coastal zone management—Part VII of the Act deals with coastal and maritime zone management. The emphasis is on protection and preservation of the coastal and marine environment. Other related legislation includes:

- The Wildlife and National Parks Act, 1993
- The Fisheries and Marine Resources Act, 1998
- Maritime Zones Act
- Ports Act, 1976

A National Environmental Action Plan (NEAP) was formulated in 1990. The Ministry of Fisheries and Marine Resources is primarily responsible for ensuring integrated planning and implementation. Various national agencies and government bodies, including the Mauritius Tourism Promotion Authority, the Central Water Authority, the Ministry of Environment and Quality of Life, the Ministry of Fisheries and Marine Resources, the Ministry of Energy, the Ministry of Health, the Ministry of Housing, Lands and Town and Country Planning, among others, have been active in implementing measures for the management of freshwater resources, energy, land use, transportation in tourist resort areas, and construction in coastal areas.

9.6 *International agreements related to the coastal environment*

Mauritius is party to

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- United Nations Conference on Straddling Stocks and Highly Migratory Fish Stocks
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)

- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal.
- International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL) 73/78

9.7 *Marine protected areas*

There are different kinds of protected areas like fishing reserves, managed natural reserves, marine national parks, nature reserves and turtle reserves. There are six fishery reserves and two national parks.

10 **Mozambique**

10.1 *Primary indicators*

Geographic co-ordinates	10°20' to 26°50'S and 30°12' to 40°51'E
Length of the coastline	2,770 km
Shelf area	68,000 sq km
Population living 100 km from the coast	59%
Number of fishers	18,000
Percentage of the population dependent on fishing	0.10%
Population dependent on fisheries	90,000 (approx.)
Contribution of agriculture to GDP	24%

10.2 *Coastal ecosystem*

Mozambique is divided into 11 provinces, seven of which are coastal. The coast is characterized by diverse and productive ecosystems, including mangroves, coral reefs, seagrass beds, sand dunes, mud flats, estuaries, deltas, rocky coasts, etc. The country has more than 10 major rivers discharging into the sea, resulting in the formation of extensive mudflats and mangroves. The continental shelf is fairly narrow.

The coastal belt of Mozambique may be divided into three main geomorphic units, which are almost adjacent to one another. These are from north to south; the coral coast, swamp coast and the dune coast with seagrass beds. The main reef system stretches for 770 km from the Rovuma River in the north, to Pebane in the south. Artisanal and commercial fishing and tourism are the dominant uses of coral reefs in Mozambique. Mangrove forests are well-developed in the northern and central sectors of the coast, and less so in the southern sector. The total area under mangroves is 925 sq km, of which 211 sq km is protected.

10.3 *Threats to the coastal ecosystem*

10.3.1 *Pollution*

- Industrial discharges and pollution by industries such as textile mills, paper and tyre factories, is limited to the Maputo and Biera regions.
- Domestic sewage and solid wastes are discharged into coastal waters and are a source of pollution.

- Coastal agriculture is increasing, as is pollution from the use of fertilizers and pesticides. Farming of marginal lands and inappropriate farming techniques are leading to siltation and increased nutrient loadings in near shore waters.

10.3.2 *Degradation of natural habitats*

- Mangroves are being felled and converted into shrimp farms, leading to coastal erosion.
- In northern Mozambique, coral reefs are being exploited for lime production—an important source of income for inhabitants. Coral reefs are under pressure from the collection of shells and coral for and by tourists.
- Coastal habitats like sand dunes are being exposed to erosion due to the construction of tourist complexes.
- There is increasing pressure on fisheries resources, and signs of overfishing in some areas.

10.3.3 *Coastal erosion*

This is caused due to active wave and storm action. Another factor is the damming of major rivers. Also, mangrove deforestation and the rapid development of tourism has caused coastal erosion to a lesser extent.

10.4 *Legislation of relevance to coastal management*

An Environmental Framework Law and a supporting regulatory framework have been established. Other relevant legislation includes:

- Forest and Wildlife Law, 1999
- Land Law and Land Law Regulations, 1997

In the case of coastal zone management, little has been achieved. Some of the problems include:

- Overlaps and gaps in institutional mandates and jurisdictions exacerbated by a lack of co-ordination between agencies with a mandate in the coastal zone.
- Government capacity to enforce regulations weak or non-existent.
- Lack of community involvement in decision-making and management.
- Limited financial capacity for managing coastal resources.

The National Environmental Management Programme (NEMP), a master plan for the environment, was approved by the government in 1994. This plan supports community-based sustainable use of resources. The need for integrated coastal zone management was one of the top five priority concerns identified in the NEMP. This led to the development of a draft National Coastal Zone Management Policy and Programme (CZMP). The CZMP aims to address coastal zone issues cross-sectorally, in an integrated and co-ordinated manner. The policy focuses on ensuring the sustainable use and conservation of biological and marine resources and in parallel allows for an equitable distribution of the benefits from their use and management among local communities, governmental agencies and development agents. The policy aims to optimize the benefits provided by the coastal zone to all stakeholders and minimize the conflicts between alternative uses.

10.5 International agreements related to the coastal environment

Mozambique is a party to:

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal (Accepted not ratified)
- International Convention on Civil Liability for Oil Pollution Damage, 1969.

10.6 Marine protected areas

MPAs are of different kinds—faunal reserve, game reserves, marine national parks, and national parks and wildlife utilization areas. The first marine national park of Mozambique was created in 1971.

11 Pakistan

11.1 Primary indicators

Geographic co-ordinates	24° to 36°N and 62° to 76°E
Length of the coastline	1,120 km
Shelf area	50,276 sq km
Population living within 100 km from the coast	9.1%
Number of fishers	401,407
Percentage of population dependent on fishing	0.2%
Population dependent on fisheries	2,007,035 (approx.)
Percentage contribution of Fisheries to GDP	0.9 %

11.2 Coastal ecosystems

One-third of Pakistan's coastline falls within the province of Sindh, while the rest is in Balochistan. The Sindh coast is characterized by a broad continental shelf and a coastline marked by a maze of creeks and mangrove covered mudflats of the Indus river delta, and is a rich nursery ground for many fish species. The Balochistan coast is generally mountainous with large bays and a narrow, abruptly descending shelf. Mangrove forests along the coast of Sindh and parts of Balochistan form part of a unique ecosystem. The total area under mangroves is 1,683 sq km, of which 290 sq km are protected. There are no real coral reefs in Pakistan, but in areas where the water is sufficiently clear towards the east, there may be small colonies growing on hard substrate.

11.3 *Threats to the coastal ecosystem*

11.3.1 *Pollution*

- Industrial pollutants originate from different sources like steel mills, oil refineries, power stations, tanneries, ship breaking yards, textile mills and pharmaceutical companies that have been built close to the coast and use the rivers and ocean as a dumping ground. Among these, tanneries are probably the biggest pollutants. Coastal waters near Karachi are especially polluted.
- Domestic wastes from households are discharged into water bodies, which eventually flow into the sea.
- Pesticides and herbicide runoffs from agricultural fields are highly polluting and increase the organic load of coastal waters.

11.3.2 *Degradation of natural habitats*

- Mangroves are under major threat and are being cleared for urban expansion and fuelwood extraction. Decline in fresh-water supplies due to the construction of dams has also had a severe effect on mangrove forests.
- Fisheries resources in the country are being affected by overfishing, excess harvesting capacity and the use of destructive fishing practices. Foreign vessels fishing under joint venture agreements are perceived as contributing to this situation.

11.4 *Legislation of relevance to coastal management*

- Pakistan's Territorial Waters and Maritime Zones Act, 1976
- Coastal Development Authority Act of Sindh, 1994
- Environmental Protection Act, 1997

These, and several other provincial and federal legislation, have a bearing on coastal resources management. The Pakistan National Conservation Strategy, 1991, and the Coastal Environmental Management Plan for Pakistan, 1996, are also of relevance. However, enforcement is known to be weak.

The Coastal Development Authority Act of Sindh, 1994, created the Coastal Development Authority (CDA) for the "development, improvement, and beautification of the coastal areas of Thatta and Badin districts." The CDA has not been able to fulfill its mandate, partly due to resource constraints.

The Pakistan Environmental Protection Act, 1997, contains new substantive laws dealing with pollution, hazardous waste and environmental impact assessments. Adverse impacts upon the environment by either private or public sector carries heavy penalties. This is the only legislation with an explicit provision for compensation for environmental damages. However, implementation of the Act is still in its initial stages.

11.5 *International agreements related to the coastal environment*

Pakistan is a party to:

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)

- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal—accepted but not ratified.
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).

12 Seychelles

12.1 Primary indicators

Geographical co-ordinates	3° 41' to 10° 7'S and 46° 15' to 56° 18' E
Length of the coastline	599 km
Shelf area	50,000 sq km
Population living within 100 km from the coast	100 %
Number of fishers	1,960
Percentage of population dependent on fishing	2.58%
Population dependent on fisheries	9,800 (approx.)
Percentage contribution of agriculture to GDP	4%

12.2 Coastal ecosystem

Of the 100 islands that make up the Seychelles, Mahe is the largest. Praslin and La Digue are other important islands. The shallow-water coastal habitats are dominated by carbonate reefs, sandy areas and corals growing on granite boulders. Fringing reefs have developed around the coasts of the granitic islands and occupy an area of approximately 60 sq km. The two other types of reefs are the platform reefs and atolls. Platform reefs have developed in the Amirantes and Farquhar groups and total over 200 sq km in area. The combined area of peripheral reefs in atolls is around 120 sq km.

12.3 Threats to the coastal ecosystem

12.3.1 Pollution

- Sewage from domestic sources and from beach-based tourist resorts, poses a threat to coral reefs. Solid wastes, from municipal and other sources, also find their way to the sea.
- Industries such as food processing plants, breweries, tuna canneries, paint manufacturing units and other agro-based industries, are known to pollute coastal waters.
- Fuel oil spills and other petroleum products dumped at sea by fishing and other vessels are another source of coastal pollution'
- Agricultural and pesticide runoff has also led to coral mortality.

12.4 Degradation of natural coastal habitats

Increase in sea-surface temperature is causing coral bleaching and mortality of coral. In 1997-98, an increase of sea-water temperature attributed to the El Niño Southern Oscillation or ENSO drastically affected shallow-water coral forms.

This also appears linked to the general global warming phenomenon. Coastal land reclamation for development purposes, like construction of houses and airports, has led to increased sedimentation and coral mortality.

12.5 *Legislation of relevance to coastal management*

- Environment Protection Act, 1994
- National Parks and Nature Conservancy Act
- Fisheries Act, 1986
- Wild Animals (Turtles) Protection Regulations, 1994
- Fisheries Act, 1986
- Fisheries (Amendment) Act, 2001
- Fisheries Regulation, 1987
- Amendment to the Fishing Regulation, 1987

The Division of Environment under the Ministry of Foreign Affairs, Planning and Environment, is responsible for policy and programme matters on environmental protection, conservation and forestry. Other relevant agencies include the Solid Waste Agency Corporation, Seychelles Fishing Authority, Department of Tourism and Transport, Seychelles Bureau of Standards and the Department of Community Development.

Conflicting views among agencies with a mandate on environmental issues hinders efficient implementation. At the same time, enforcement of existing legislation is weak.

12.6 *International agreements related to the coastal environment*

Seychelles is a party to

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- United Nations Conference on Straddling Stocks and Highly Migratory Fish Stocks Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal
- International Convention on Civil Liability for Oil Pollution Damage, 1969.

12.7 *Marine protected areas*

In 1973, the first marine protected area of Seychelles was created the Ste. Annes National Park. In Seychelles, there are at least five different types of MPAs:

- Marine National Parks (National Parks and Nature Conservancy Act–Cap 141)
- Shell (Mollusc) Reserves (Fisheries Act–Cap 82)
- Special Reserves (National Parks and Nature Conservancy Act–Cap 141)
- Protected Areas (Protected Areas Act–Cap 185)

- Strict Natural Reserve (National Parks and Nature Conservancy Act–Cap 141)

Protection of certain marine areas may also take the form of exclusion zones, where some types of fishing gears or fishing vessels are prohibited.

13 South Africa

13.1 Primary indicators

Geographical co-ordinates	22° 12' E to 32° 9' W and 16° 47' N to 34° 84' S
Length of the coastline	3,000 km
Shelf area	160,900 km
Population within 100 km from the coast	38.9 %
Number of fishers	10,500
Percentage dependent of fishing	0.02%
Population dependent on fisheries	52,500 (approx.)
GDP from agriculture	5%

13.2 Coastal ecosystem

South Africa's marine life is diverse, partly as a result of the extreme contrast between the water masses on the east and west coasts. Three water masses—the cold Benguela Current, the warm Agulhas Current, and oceanic water—make the region one of the most oceanographically heterogeneous in the world. According to the White Paper on Coastal Policy, over 10,000 plant and animal species—almost 15 per cent of the coastal species known worldwide—are found in South African waters, with about 12 per cent of these occurring nowhere else. Estuaries form an important ecosystem, whose resources are harvested for recreational, and subsistence or artisanal purposes. The coral reefs and coral communities of South Africa lie between 26 °–27° S. These are the most southerly reefs in the western Indian Ocean. The total area under mangroves is 11 sq km.

13.3 Threats to the coastal ecosystem

13.3.1 Pollution

- Domestic and industrial wastes, as well as wastes generated from mining activities, are an important source of pollution.
- A primary source of sea-based pollution is the shipping industry. Such pollution occurs from accidental oil spills, discharge of oily wastes and ballast waters, plastics and other pollutants released from ships, and ship maintenance activities.

13.4 Legislation of relevance to coastal management

- Marine Living Resource Act, 1998
- Coastal Zone Management Act
- Sea Birds and Seals Protection Act 46 (1973)

- Dumping at Sea Control Act 73 (1980)
- Marine Pollution (Prevention of Pollution from Ships)
- Marine Pollution (Intervention) Act 64
- National Water Act (No.36 of 1998)
- National Environment Management Bill

There are White Papers on Conservation and Sustainable Use of South Africa's Biodiversity and on Sustainable Coastal Development. The main national policy concerned with integrated coastal zone management is the White Paper on Coastal Policy. It provides for the participation of a broad spectrum of stakeholders and interested and affected parties.

The Department of Environmental Affairs and Tourism (DEA & T) is responsible for integrated coastal zone management, marine pollution control and sustainable use and conservation of marine living resources. Although the national department bears overall responsibility, provinces play a major role, since the Constitution of South Africa gives wider powers to the provinces. The South African Maritime Safety Authority (SAMSA), Department of Water Affairs and Forestry (DWAF) and Department of Minerals and Energy (DME) are other key bodies dealing with marine environmental protection. A Committee for Environmental Co-ordination (CEC) and several subcommittees have been established in terms of the Environmental Conservation Act (Act No. 73 of 1989) to facilitate co-ordination between the responsible bodies.

13.5 *International agreements related to the coastal environment*

South Africa is a party to:

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
- International Convention on Civil Liability for Oil Pollution Damage, 1969.

13.6 *Marine protected areas*

South Africa has one centrally managed MPA, the St. Lucia and Maputaland Marine Reserve under the KwaZulu-Natal Conservation Service, and one user-management area, the Aliwal Shoal, in which managed zones cover all of the coral reef area.

14 **Sri Lanka**

14.1 *Primary indicators*

Geographic co-ordinates	6° to 10° N and 79° to 82° E
Length of the coastline	1,770 km (approx.)
Shelf area	27,000 sq km (approx.)

Population living within 100 km from the coast	100 %
Number of fishers	83,776
Percentage of population dependent on fishing	0.44%
Population dependent on fisheries	418,880 (approx.)
GDP from fisheries sector	3%

14.2 Coastal ecosystem

The coastal ecosystem comprises lagoons, estuaries, mangroves, seagrass beds, salt marshes and coral reefs. Mangroves are not so abundant and cover an area of approximately 89 sq km, of which 8 sq km is protected. Extensive seagrass beds are found in the many estuaries of Sri Lanka where they make a significant contribution to primary productivity in coastal waters and to coastal fisheries production.

14.3 Threats to the coastal ecosystem

14.3.1 Pollution

- Domestic sewage and wastes from most urban centres are discharged directly into the sea. Tourist activities are a common source of beach and water pollution.
- Industrial wastes, especially from the textile and paper industry, asbestos-cement plants, leather tanneries, coconut and rubber-based industries, are major sources of coastal pollution.
- Pesticides and fertilizers, heavily used in agriculture, are major pollutants.
- There is considerable oil pollution from ship traffic along the international shipping route south of Sri Lanka.
- Pollution has also been a result of shrimp aquaculture operations.

14.3.2 Degradation of natural habitats

- Mangrove forests are being cut down for aquaculture and agriculture. Mangroves are also being used for firewood and timber.
- Degradation of coral reefs is primarily due to coral mining, destructive fishing practices, siltation and blasting of reefs for the construction of navigation channels, and collection of aquarium species. Tourist activities are also contributing to the pressure on coral reefs.
- Lagoons and estuaries are being threatened by urban encroachment, pollutants, siltation and over-fishing.
- Deforestation, poor agricultural practices and encroachment of river banks contribute to siltation—coral reefs are smothered, mangroves, lagoons and estuaries become shallower and coastal waters become turbid.
- The practice of dynamite fishing, bottom-trawling, drag-net fishing, bottom-set nets and gill-nets affects the coral reefs and the benthic population.

14.3.3 Coastal erosion

About half of the Sri Lankan coastline, particularly in the south, is exposed to coastal erosion. Construction of dams, river sand mining, degradation of natural coastal habitats, and improperly constructed hotels, fishery harbours and other structures, contribute to coastal erosion. Sri Lanka will be highly vulnerable to any rise of sea level due to the global warming process.

14.4 Legislation of relevance to coastal management

Sri Lanka has a long 20-year history of coastal management. The Coast Conservation Act (CCA), 1981, deals specifically with coastal problems in a comprehensive way.

Other relevant legislation includes:

- The Marine Pollution Prevention Act, 1981
- National Environment Act, 1980
- Fisheries and Aquatic Resources Act No 2 of 1996
- Fauna and Flora Protection Ordinance No.2 of 1937 (Includes protected marine species used in the ornamental fish trade)
- National Aquaculture Development Authority Act, 1998
- The National Aquatic Resources, Research and Development Agency Act No.54 of 1981
- The Natural Resources Energy and Science Authority of Sri Lanka Act No.78 of 1981
- The Urban Development Authority Law No. 41 of 1978 and its Amendment in 1982
- The Sri Lanka Land Reclamation and Development Corporation (LRDC) Act
- The Seashore Protection Ordinance 1979
- The Natural Heritage and Wilderness Act 1980 and its Amendment in 1988
- The Tourist Development Act No.14 of 1968

Under the CCA, Sri Lanka's coastal zone is defined as the area lying within a limit of 300 m landward of the Mean High Water Line and a limit of 2 km seawards of the Mean Low Water Line. In the case of rivers, streams, lagoons or any other body of water connected to the sea, either permanently or periodically, the landward boundary is considered to extend up to 2 km. The Act aims at regulating development within this narrow zone to prevent environmental degradation, pollution and erosion. It prescribes two important tools for the regulation of development activity, namely the permit system and the Environment Impact Assessment requirement. Special Area Management Projects (SAM) are other coastal management initiatives currently underway.

There is a special Coast Conservation Department (CCD) to handle all matters related to conservation of coastal resources. It also has the mandate of helping co-ordinate the sectoral activities of the approximately 32 agencies with jurisdiction over coastal areas and resources.

There continue to be shortcomings in the Act and in its implementation:

- The narrow geographic definition of the coastal zone, and the fact that most coastal habitats like mangroves, wetlands, etc. are located outside this area, make it difficult for the CCD to initiate integrated management plans.
- Within the Act, while there is provision to regulate activities that alter the physical nature of the coastal zone, there is no such provision to regulate activities that impact on, for example, its environmental quality, such as industrial pollution in inland areas.
- Enforcement and monitoring have been weak.

- Public participation in coastal zone planning has been limited.
- There have been problems with the way EIAs have been carried out.
- Jurisdiction over coastal area and resources is distributed between agencies, and inter-agency co-ordination is often weak.

14.5 *International agreements related to the coastal environment*

Sri Lanka is a party to:

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- United Nations Conference on Straddling Stocks and Highly Migratory Fish Stocks Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal (Accepted not ratified)
- International Convention on Civil Liability for Oil Pollution Damage 1969 (CLC)

Sri Lanka has not ratified the articles of association of the International Convention for the Prevention of Pollution from Ships (MARPOL 1973/ 78).

14.6 *Marine protected areas*

There are three kinds of protected areas in Sri Lanka—national parks, sanctuaries and natural reserves.

15 **Tanzania**

15.1 *Primary indicators*

Geographic co-ordinates	Between 1° to 11° 45 'S and 29° 21' E
Length of the coastline	1,424 km
Shelf area	17,900 sq km
Population living within 100 km from the coast	21.1%
Number of fishers	62,593
Percentage of population dependent on fishing	0.17%
Population dependent on fisheries	312,965 (approx.)
GDP from fisheries sector	2.9%

15.2 *Coastal ecosystem*

Tanzania is situated between the great lakes of Victoria, Tanganyika and Nyasa, with the Rift valley system on the one hand and the Indian Ocean on the other. There are three main coastal and marine habitats along the Tanzanian coast: coral reefs, mangrove forests and seagrass beds. Shallow lagoons, estuaries, mudflats, rocky shores, sandy beaches, dune systems and coastal forests are also to be found. Tanzania has a narrow continental shelf of less than 5 km, except in a few areas. Several rivers drain into the Indian Ocean.

Coral reefs are estimated to cover 600 km of the Tanzanian coastline. Mangrove forests are prominent along river outlets and estuaries. The area under mangroves is 1,155 sq km, of which about 14 sq km are protected. The Rufiji delta contains the largest single area of mangrove forest in southern Africa. Seagrass and algal beds are extensive on sand and intertidal mud flats, sandy lagoons and at the base of shallow coral reefs. There are over 300 species of algae reported from Tanzania.

15.3 *Threats to the coastal ecosystem*

15.3.1 *Pollution*

- The main sources of pollution are from domestic, agricultural and industrial sources.
- The use of pesticides and biocides in agriculture has tripled in coastal areas to combat vermin infestation. Leaching of pesticides and poisons have led to mortality of corals and other marine life along the coast.
- Sewage and other solid wastes (including plastics) from urban areas is an important source of pollution.
- Tourist activities have led to sewage pollution, environmental damage through poorly planned construction, damage to coastal and marine habitats and overextraction of natural resources.
- Pollution from industrial sources is mainly concentrated around Dar es Salaam and is mainly from industries like agrochemicals, chemicals, breweries, metal, food and textiles.

15.4 *Degradation of natural coastal habitats*

There has been a decline in area under mangroves all over Tanzania, as mangroves have been cleared for salt production, agriculture, aquaculture, urban and industrial development, and for firewood, pole and charcoal production.

Coral mining is considered one of the major contributors to reef degradation along the coast. It has led to increased erosion, and decline in abundance of fish communities. At the same time, corals have also been affected by destructive fishing practices such as "Kigumi fishing" (dynamiting).

15.5 *Coastal erosion*

The Tanzanian coastline is vulnerable to coastal erosion. For example, the erosion of the Kunduchi beach, apparently because of the mining of sand at the beach crest, led to the closure of some buildings.

15.6 *Legislation of relevance to coastal management*

- Marine Parks and Reserves Act, 1994
- Fisheries (Marine Reserves) regulations, 1975
- Environment Conservation Act No. 19, 1983

Other related legislation are:

- The Fisheries Explosives, Poisons and Water Pollution Regulation, 1982 (Amending regulations 26,27 and 28 of the Fisheries General Regulations, 1973)

- The Petroleum (Exploration and Production) Act No. 27, 1980
- Inland Water Transport Ordinance, Cap.172
- Wildlife Conservation Act
- The Public Beach Planning Area Order, 1992
- National Land Use Planning Commission Act, 1984
- Town and Country Planning Ordinance
- National Environmental Policy

The Tanzania government, through the Vice President's office and the National Environment Management Council (NEMC), has initiated the Tanzania Coastal Management Partnership in 1997. It aims to develop an overall framework that supports coastal management at the national and local levels, and to develop human and institutional capacity for this.

Coastal management is currently being dealt with through a number of bodies and programmes, including the National Management Plan for the Conservation of Mangroves, the Mafia Island Marine Park, the Tanga Regional Integrated Coastal Management Project, the National Conservation Strategy for Sustainable Development, the National Marine Contingency Plan, and the National Environment Action Plan.

These initiatives are still in their initial stages. Problem areas include:

- There is no single agency responsible for co-ordinating coastal management programmes.
- Implementation of existing legislation and plans is weak.

15.7 *International agreements related to the coastal environment*

Tanzania is party to:

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR)
- Basel Convention on the control of Transboundary Movements of Hazardous Wastes and Their Disposal
- International Convention for the Protection of Pollution from Ships (MARPOL 1973/ 78)
- International Convention on Oil Pollution Preparedness, Response and Co-operation

Tanzania is also party to a regional convention the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (the Nairobi Convention).

15.8 *Marine protected areas*

Seven marine reserves have been demarcated in Tanzania under the Marine Parks and Reserve Act. The Act provides for community-based conservation through the involvement of villagers and local resident users dependent on a marine park or marine reserve. According to the government, these stakeholders are involved in all phases of the planning, development and management of the particular marine park or reserve, and are entitled to a share in its benefits.

16 Thailand

16.1 Primary indicators

Geographic co-ordinates	5° to 21° N and 97° to 106° E
Length of the coastline	2,624 km
Shelf area	394,000 sq km
Population living within 100 km from the coast	38.7 %
Number of fishers	438,934
Percentage of population dependent on fishing	0.71%
Population dependent on fisheries	2,194,670 (approx.)
GDP from fisheries sector	1.9%

16.2 Coastal ecosystem

The coastal ecosystem comprises estuaries, lagoons, coastal wetlands, mangrove forests, seagrass beds and fringing coral reefs. The coastline along the Andaman Sea, including the mainland and small islands, is approximately 700 km in length. Varied habitats, including coral reefs, mangroves, seagrass beds and rocky shores, are found. The coastline along the Gulf of Thailand is approximately 1,600 km. Coral reefs are found around islands. The total area under coral reefs is 153 sq km and the area under mangroves is 2,641 sq km, of which 256 sq km is protected.

16.3 Threats to the coastal ecosystem

16.3.1 Pollution

- The primary sources of land-based pollution are agricultural runoff, coastal aquaculture, industrial effluents and domestic sewage. Tourist activities, especially beach resorts, are also polluting.
- The primary sources of sea-based pollution are from offshore oil and gas exploration, maritime transportation, shipping, oil spills, dredging, etc.

16.3.2 Degradation of natural habitats

- Coral reefs are threatened by pollution and sedimentation.
- Destruction of mangroves is due to conversion into aquaculture farms, mining, salt farming and coastal construction.
- Overfishing is a result of excess fishing pressure, especially from the commercial fishing fleet. At present, 40 per cent of the marine capture consists of juvenile fish.
- Land subsidence and sea-level rise pose a major threat to the coastal ecosystem.

16.4 Legislation of relevance to coastal management and status of implementation

There are no specific laws on coastal area management. Laws with a bearing on the coastal zone include:

- Fisheries Act, 1994
- National Marine Park Act, 1961
- Factory Act, 1992
- Wild Animal Protection and Reserves Act, 1992
- Navigation in Thai Water Act, 1961
- Enhancement and Conservation of National Environmental Quality Act, 1992

Key policies emphasizing the sustainable use of fisheries and coastal resources include:

- National Forest Reserves Policy since 1964
- Non-hunting area policy since 1984
- Fishery protection zone policies since 1972, which reserves the 3-mile inshore zone for artisanal fisheries

The new constitution adopted in 1997 highlights the importance of promoting and supporting public participation in environmental management and conservation. It specifies individual and community rights and, in effect, reduces the role of the State as the sole decisionmaker in natural resource management.

The Environment Impact Assessment (EIA), as one of the management tools for project decisionmaking in order to minimize the environmental impact created and resource depletion, is in use in Thailand. The Office of Environmental Policy and Planning (OEPP) is responsible for identifying the type and size of project of activities for which mandatory EIA is required. Of late, public hearings have been conducted in some large projects, that is, mass transit systems. Social Impact Assessment (SIA) is becoming an important issue.

In Thailand, there are several departments responsible for coastal area and fisheries issues. For example, the National Environmental Board is the main body determining the national coastal resource and environment policy and the Office of Environmental Policy and Planning co-ordinates integrated coastal zone management. Other agencies playing major roles in coastal resources and fisheries management include the Pollution Control Department, the Harbour Department, the Department of Fisheries, the Royal Forestry Department, the Department of Local Administration, the City Planning Department, the Department of Industrial Work, and the Department of Environmental Quality Promotion. The Pollution Control Department has set Environmental Quality Standards.

Implementation of coastal areas management programmes has been weak for some of the following reasons:

- The lack of co-ordination between the various agencies with a mandate for coastal management and fisheries issues has led to some duplication of efforts undertaken by them.
- At the same time, conflicts among State agencies over the use of coastal resources, arising from their different objectives, such as conservation, productivity increases and tourism promotion, are not uncommon.
- Procedures for law enforcement are centralized and complicated and implementation is weak. At the same time, violators exploit loopholes in the law.
- The government lacks an appropriate process to prioritize environmental problems and projects.
- There is no specific legislation on coastal area management.
- The economic crisis in Thailand has led to a reduction in the budget available for coastal resources management and has accelerated resource exploitation.
- Limited participation of local communities in coastal management initiatives.

16.5 *International agreements related to the coastal environment*

Thailand is a party to:

- United Nations Framework Convention on Climate Change (UNFCCC)
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)—signed but not ratified.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance, especially as Waterfowl Habitat (RAMSAR)
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
- Convention on Biological Diversity (CBD)—signed, not ratified.
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)—not signed.

**Table 1: International Agreements and Conventions Ratified
by Selected Countries in the Indian Ocean Region**

	UNCLOS	UNFCCC	CBD	CITES	RAMSAR	Basel Con- vention	CLC 69	Marpol 73/78	Stradd/ Highly Mig Fish Stocks
Australia	R	R	R	R	R	R	–	R	R
Bangladesh	R	R	R	R	R	R	–	–	S
India	R	R	R	R	R	R	R	R	–
Indonesia	R	R	R	R	R	S	R	R	S
Kenya	R	R	R	R	R	S	R	R	–
Madagascar	R	R	R	R	R	S	S	–	–
Malaysia	R	R	R	R	R	S	R	R	–
Maldives	R	R	R	–	–	S	R	–	R
Mauritius	R	R	R	R	R	S	R	R	R
Mozambique	R	R	R	R	–	S	R	–	–
Pakistan	R	R	R	R	R	S	R	R	S
Seychelles	R	R	R	R	–	S	R	R	R
South Africa	R	R	R	R	R	S	R	R	–
Sri Lanka	R	R	R	R	R	S	–	R	R
Tanzania	R	R	R	R	R	S	–	–	–
Thailand	S	R	S	R	R	R	–	–	–

Legend

UNCLOS	1982 United Nations Convention on the Law of the Sea
UNFCCC	United Nations Framework Convention on Climate Change
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLC 69	International Convention on Civil Liability for Oil Pollution Damage
RAMSAR	Convention on Wetlands of International Importance especially as Waterfowl Habitat
Basel Convention	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships
Stradd/Highly Mig Fish Stocks	Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish stocks
R	Ratified
S	Signed
–	Not Signed

Table 2: Comparison of Primary Indicators

	Length of the coast-line (in km)	Shelf Area (in sq km)	Population living within 100km from the coast (percentage)	Number of fishers	Percentage of population dependent on fishing	Percentage contribution of fisheries to GDP
Australia	66,530	2,065,000	89.8	15,800	0.08	0.2
Bangladesh	480	66,400	54.8	1,444,960	1.08	4.0
India	8,118	500,000	26.3	5,958,744	0.58	1.3
Indonesia	81,000	1,713,000	95.9	4,668,482	2.15	16.10 *
Kenya	608	8,500	7.6	43,488	0.13	
Madagascar	5,096		55.1	142,666	0.98	
Malaysia	4,400	418,000	98	100,666	0.44	1.5
Maldives	644		100	22,109	7.70	11.0
Mauritius	322.5	1300	100	10,713	0.91	10*
Mozambique	2,770	68,000	59	18,000	0.10	24*
Pakistan	1,120	50,276	9.1	401,407	0.20	0.9
Seychelles	599	50,000	100	1,960	2.58	4*
South Africa	3,000	160,900	39.9	10,500	0.05	5*
Sri Lanka	1,770	27,000	100	83,776	0.44	3.0
Tanzania	1,424	17,900	21.1	62,593	0.17	2.9
Thailand	2,624	394,000	38.7	438,934	0.71	1.9

*GDP from Agricultural sector (fisheries and agriculture combined)

Table 3: Main threats to coastal ecosystems in countries of the Indian Ocean Region

Countries	Pollution	Degradation of Natural Habitats			Coastal Erosion
		Coral Reefs	Mangroves	Fishery Resources	
Australia	Land-based sources, including domestic, industrial and agricultural wastes Beach litter	Bleaching of corals due to ENSO effect.	Inappropriate coastal construction has affected coastal wetlands	Introduction of non-native species through ballast water discharge Overfishing	
Bangladesh	Industries like textiles, steel, leather, agrochemical Domestic wastes Agricultural wastes Oil pollution from ship traffic		Conversion to aquaculture farms Cutting for fuelwood and timber Increase in sedimentation, salinity, siltation	Overfishing in inshore waters Destructive fishing practices	Improper construction of structures such as breakwalls, ports
India	Industrial wastes Domestic wastes Pesticides and fertilizers from agricultural sources Oil from ship traffic	Sedimentation and siltation Exploited for sale of commercial products, shells, etc.	Conversion to aquaculture farms Cutting for fuelwood and timber Increase in sedimentation, salinity, siltation Reclamation of wetlands and mangroves for urban development	Destructive fishing practices and overfishing	Increased siltation and sedimentation due to construction of embankments and dykes, poorly designed coastal structures
Indonesia	Domestic sewage Industrial wastes from mining, tanneries, food processing. Agricultural runoff with chemical fertilizers Marine debris from land-based sources, shipping and fishing activities	Reefs are damaged by overexploitation, sedimentation and organic pollution, as well as by destructive fishing practices Coral mining	Illegal cutting of mangrove forests Degradation due to coastal development and land-based pollution Conversion of intertidal zones to paddy fields	Overfishing Destructive fishing practices like cyanide fishing	Land reclamation for coastal development has led to subsidence and flooding

Countries	Pollution	Degradation of Natural Habitats			Coastal Erosion
		Coral Reefs	Mangroves	Fishery Resources	
Kenya	Industrial wastes around Mombasa Domestic wastes, solid wastes and sewage Oil discharge from ship traffic Chemicals and fertilizers from agricultural run-off	Siltation caused by deforestation and destructive agricultural practices ENSO	Conversion to aquaculture ponds or for salt production Degraded due to siltation and sedimentation	Destructive fishing practices Overfishing by foreign fishing fleet Collection of aquarium fish	Construction of structures for tourism development
Madagascar	Untreated domestic wastes Industrial pollution from oil refineries, mines. Fertilizer runoff from sugarcane plantations	Coral mining Coral collection for curios Sedimentation			Port construction and channel modification Natural causes like shifting rivers, canals
Malaysia	Untreated domestic sewage Industrial wastes from palm oil and rubber-based industries Heavy metal pollution Pesticide runoff from agricultural fields Oil discharge from ship traffic	Organic pollution Sedimentation Coral collection for curios	Converted to aquaculture farms Organic pollution Sedimentation	Overfishing Destructive fishing practices	Increase exposure to erosion due to degradation of mangroves and other natural habitats
Maldives	Sewage and solid waste from domestic and tourist activities	Coral mining for construction purposes ENSO Global warming and sea-level rise Collection of aquarium species		Destructive fishing practices have affected some reef and lagoon fisheries	Improper construction of groynes and other structures Increased exposure to wave action due to coral mining
Mauritius	Industrial pollution from textile and sugar mills Domestic wastes—sewage, solid waste and waste waters Pesticide from sugarcane fields	Coral collection for commercial purposes Degradation due to destructive fishing practices, sedimentation, pollution, and coral mining	Felling of mangroves for construction purposes Reclamation of land for urbanization and tourism development	Destructive fishing practices Overfishing in inshore reef areas	

Countries	Pollution	Degradation of Natural Habitats				Coastal Erosion
		Coral Reefs	Mangroves	Fishery Resources		
Mozambique	Industrial discharges from textile, paper and tyre factories Domestic wastes Coastal agricultural runoff	Coral mining Coral and shell collection for trade	Conversion to aquaculture farms	Increasing pressure on the fish resources	Due to factors like construction of tourism complexes, loss of mangrove forests, damming of rivers	
Pakistan	Industrial wastes from steel mines, oil refineries, power stations, shipbreaking yards Domestic wastes Pesticides and herbicides from agricultural fields		Extraction for fuelwood and timber Reclamation for urban expansion Increased salinity as fresh water is diverted by dams, etc.	Destructive fishing practices Overfishing Fishing by foreign fleets		
Seychelles	Domestic wastes, mostly sewage and solid wastes Industrial wastes from food processing plants, breweries, tuna canneries, etc. Sea-based pollution—oil from ships Agricultural runoff	ENSO, increase in sea-surface temperature affects the coral reefs Land reclamation has led to sedimentation			Coastal land reclamation for development purpose	
South Africa	Domestic wastes from urban centres Industrial wastes—wastes from mining activities Sea-based pollution—oil from ships	ENSO, increase in sea-surface temperature				
Sri Lanka	Wastes from domestic and tourist activities Industrial wastes from textile, paper, coconut, rubber-based industry, leather tanneries, cement plants and aquaculture farms Agricultural runoff Oil pollution from ship traffic	Coral mining Blasting of coral reefs for construction of navigation channels Siltation Destructive fishing practices like dynamiting Collection of aquarium species	Fuelwood and timber extraction Conversion to agriculture and aquaculture farms Sedimentation and siltation	Destructive fishing practices Dynamite fishing, trawling and drag-net fishing	Reclamation of coastal areas for development purposes Construction of dams, fishing harbours and other structures	

Countries	Pollution	Degradation of Natural Habitats			Coastal Erosion
		Coral Reefs	Mangroves	Fishery Resources	
Tanzania	Agricultural runoff Wastes from domestic and tourist activities Industrial wastes from agrochemicals, chemicals, breweries, and textile industries around Dar es Salaam	Coral mining Destructive fishing practices like dynamiting	Converted to agriculture and aquaculture farms Fuelwood and charcoal extraction Cleared for urban and industrial development		Sand mining for construction
Thailand	Agricultural runoff Industrial wastes Wastes from domestic and sewage activities Oil wastes from shipping and offshore mining	Coral reefs affected by sedimentation and pollution	Conversion to aquaculture farms, salt production, mining	Overfishing, especially by the commercial fishing fleet	

Table 4: Regional Arrangements related to Coastal Area Management in the Indian Ocean Region

Name	Objective	Member states	Secretariat	Other information
Eastern African Coastal Area Management (SEACAM)	To act as a catalyst for advancing coastal management in Eastern Africa	Eritrea, Kenya, Tanzania, Mozambique, Comoros, Reunion, Madagascar, Seychelles and Mauritius, South Africa	Mozambique	The Secretariat assists Eastern African countries to advance their ICZM programmes. Rather than implementing coastal management projects itself, SEACAM provides information and builds capacity in countries to implement their ICZM programs. It places particular emphasis on communicating the lessons learned from the regional experience in ICZM and from other developing countries. The Secretariat also works closely with other regional programs
Eastern African Action Plan of the Regional Seas Programme of UNEP (EAF)	Protection, management and development of the marine and coastal environment of the Eastern African region	Somalia, Kenya, Tanzania, Mozambique, Comoros, Reunion, Madagascar, Seychelles and Mauritius	Regional Coordinating Unit/RCU/EAF, located in Seychelles	The Nairobi Convention, providing the legal framework for the 1985 Action Plan, was signed in 1985, together with two protocols, including one on co-operation in combating marine pollution in cases of emergency.
Inter-governmental Oceanographic Commission's Regional Committee for the Co-operative Investigation of the North and Central Western Indian Ocean (IOCINCWIO)	Identify priorities for marine research, ocean and coastal observations	Reunion, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia and Tanzania	Paris, France	The IOCINCWIO is a regional subsidiary of the inter-governmental Oceanographic Commission of UNESCO, that meets every 4-5 years to define a work plan for the western Indian Ocean Region. The current Action Plans covers the period 1997-2000. The projects approved by the regional committee include: Biodiversity and inventory of critical habitats (seagrass beds, coral reefs and mangroves); and Recruitment and stock assessment of fisheries resources
SAREC Regional Marine Science Programme (SIDA-SAREC)	SIDA supports the marine science programme for the Eastern African region. The programme undertakes research and training activities aimed at providing the scientific capacity required to formulate management measures for the sustainable use of coastal and marine resources in the region.	East African countries		The SIDA-IOC programmes aim to build up human and infrastructure capacities in the region. They both pool their resources together for the programme. The SAREC-IOC partnership used the IOC regional subsidiary body, IOCINCWIO to establish regional marine training and research priorities for the region.

Name	Objective	Member states	Secretariat	Other information
Regional Environment Programme of the Indian Ocean Commission (IOC)	To promote a regional policy for the sustainable management of the natural resources in the five member States	Island States: Comoros, Reunion, Madagascar, Mauritius and Seychelles.	Seychelles	The programme provides support for national policies on Integrated Coastal Zone Management (ICZM), which encourages the development of a coherent global approach to the management of natural resources in these island States
East Asian Seas-Regional coordinating unit of UNEP	Concern for the consequences and causes of environmental degradation, and encompassing a comprehensive approach to compacting environmental problems through the management of marine and coastal areas.	Australia, Cambodia, China, Indonesia, R. Korea, Malaysia, Philippines, Singapore, Thailand and Viet Nam	Bangkok	Its mandate is to co-ordinate, where appropriate, the activities of governments, non-government organizations, donor agencies, UN agencies and individuals in caring for the marine environments of East Asian seas. Apart from co-ordination, the Unit obtains funds to carry out marine management issues and is the lead agency for the United Nations in marine environmental matters in the Region.
The South Asia Co-operative Environment Programme (SACEP)	To foster subregional co-operation in the areas of sustainable development.	Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.	Colombo	The programme areas include: capacity building and institutional strengthening; conservation and sustainable use of biodiversity; ecosystems conservation and management; Environmental information and assessment; education and enhancement of awareness.
IOC Regional Committee for the Central Indian Ocean (IOCINDIO)	Promoting marine scientific investigations and related ocean services, with a view to learning more about the nature and resources of the oceans		New Delhi	The IOC co-operates with other organizations and programmes, including UNEP, IMO etc. There is a specific focus on Integrated Coastal Area Management and Marine Pollution.
The Strategic Plan of Action on the Environment (SPA-E) of the ASEAN	Sets out specific and measurable actions for the objectives in the Ha Noi Plan of Action of the ASEAN	Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand Viet Nam	Jakarta, Indonesia	The action plan has a project on the "Regional Co-ordination for Integrated Protection and Management of Coastal and Marine Environment"

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Posters

Maps

