



The Law of the Sea



and the
Indian Ocean



5.1
2005 25



prepared for the
United Nations Environment Programme
and the
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Cover: Sri Lankan fisherman.



The Law of the Sea and the Indian Ocean

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Growing problems, growing concern

Some thirty per cent of the world's population, 1.6 billion people, live in the Indian Ocean region and depend heavily on the resources of the sea to meet their growing needs. But, from eastern Africa to western Australia, from the Antarctic to the Indian subcontinent, the waters of the Indian Ocean are already feeling the destructive impact of human pressures.

The oceans are under stress from growing coastal populations, rapid industrialization and over-consumption of resources. Many people in the coastal zone depend on its waters for their livelihood. Paradoxically, coastal waters suffer worst from the effects of pollution.

As a result, people in the Indian Ocean region are becoming increasingly concerned about the growing problems of the marine environment. And since the same problems crop up in several countries, the best response is to find shared solutions through regional co-operation.



Concern for the fate of the world's oceans in the 1960s paved the way to the United Nations Conference on the Human Environment held in Stockholm in June 1972, and led to the creation of the United Nations Environment Programme (UNEP). In 1973 a programme was designed to tackle the problems threatening the oceans through both a regional and a global approach.

The Regional Seas Programme of UNEP aims to help coastal States develop environmental awareness by using the existing infrastructure of the United Nations. It is one of the most comprehensive programmes in existence, dealing with all uses of the ocean and with all activities on land which have an impact on the marine environment.

Today UNEP has 10 regional programmes involving 130 coastal States – all working to make the world's oceans safer, cleaner and more productive.

Birth of a new order

The need for an international law to regulate human use of the oceans was recognized as early as the Code of Hammurabi almost 4000 years ago. With the centuries and the growth of the maritime powers, the law continued to evolve. But the most dramatic developments are recent responses to new scientific and technological capabilities, growing demands for marine resources, and realization of the potential for new conflict among States. The mounting evidence of marine degradation from human activities has also contributed to the rapid development of international ocean law over the past 20 years.

Standing at the centre of a complex of legal agreements – both global and regional – is the Law of the Sea, finally agreed upon in 1982 after nine years of complex negotiations. It is a global instrument dealing with all ocean space and with all the many ocean uses – shipping and navigation, mineral development, fisheries, scientific research, environmental protection, etc. – as well as with settlement of disputes.

The Convention brings order where there was none, by drawing up new boundaries of State sovereignty and jurisdiction. It gives landlocked and geographically disadvantaged States new rights. Old traditions are redefined and new universal standards are set. A new international regime is created to bring peaceful and orderly development to the deep seabed area beyond all national jurisdiction.

The Convention is an exceptional example of internationalism and contributes significantly to the rule of law among nations. It is already considered to have had a major impact on the users of the Indian Ocean, particularly through those sections which deal with the conservation, management and the protection of the marine and coastal environment and its resources.

More than 35 Indian Ocean States have signed the Convention.

Promoting togetherness

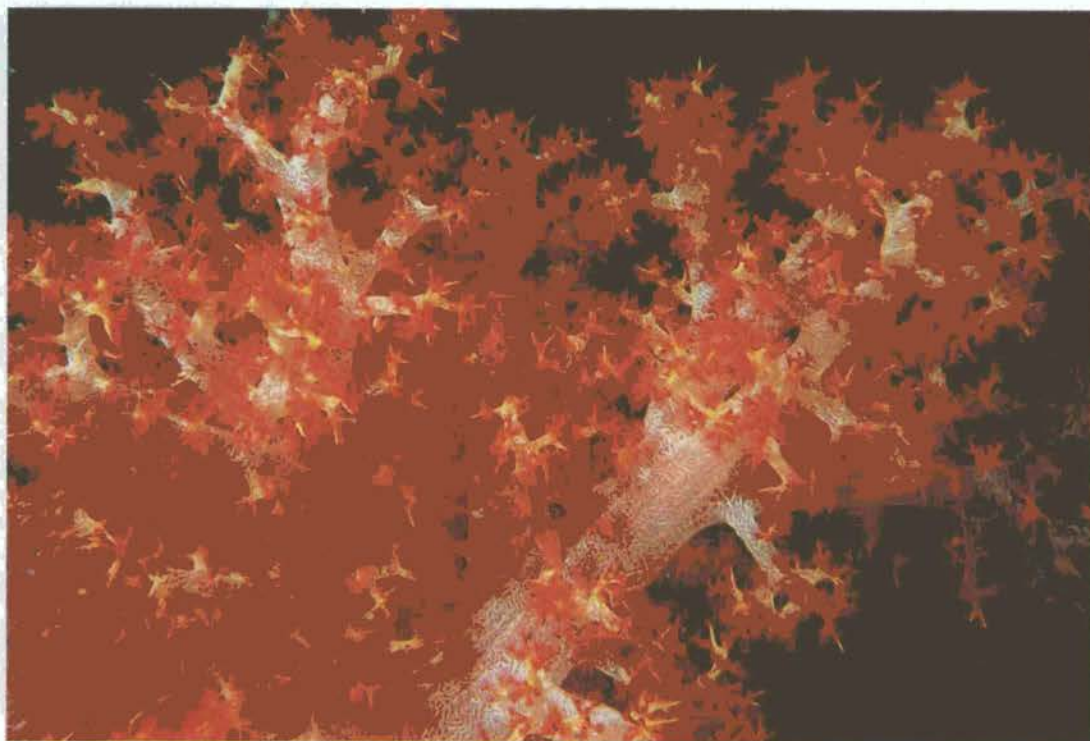
The Law of the Sea Convention encourages States to co-operate, directly or through relevant international organizations, in the protection and preservation of the marine environment. Ever since the Convention was adopted, UNEP has actively supported its objectives by giving high priority to the development of regional activities. Through its Regional Seas Programme, UNEP helps developing countries to formulate their own national mechanisms to carry out environmental action plans.

Today the Regional Seas Programme plays an increasingly important role in implementing the Convention. It involves five regions of the Indian Ocean: Eastern Africa, the Red Sea and Gulf of Aden, the Kuwait Action Plan region, the South Asian Seas, and the East Asian Seas.

One of the Programme's major objectives is to encourage countries of the Indian Ocean to find common solutions to problems which are both of particular and of regional concern to them.

Each action plan is unique and is drawn up according to the wishes of the participating countries, thereby reflecting the particular concerns of the region under review. What they do have in common, however, are the basic concepts: to help the countries of the region to assess marine

Awakened environmental awareness has stimulated Indian Ocean States to set up marine parks to protect and manage their coral reefs.



pollution, to promote the control of marine pollution, to co-ordinate efforts in management, and to support education and training.

More and more governments are rapidly becoming aware of the necessity to protect and preserve the environment by means of national conservation efforts and integrated management of resources.

Already, 34 States are co-operating in UNEP's five Regional Seas Programmes in the Indian Ocean.

Whose oceans?

The special significance of the Convention to Indian Ocean States lies in the extension of maritime jurisdiction and the enormous ocean space some of the island States have acquired.

In the past, States were not restricted in their use of the oceans. Now regulations and standards have been created that all States must live up to; this is the basic idea behind the provisions of the Law of the Sea Convention regarding maritime boundaries.



Ships entering the territorial seas of Indian Ocean States are now obliged to observe international regulations regarding pollution.

A territorial sea

Under the Convention, a State can claim a 12-mile territorial sea and, except for Qatar, Singapore and Somalia, all States in the Indian Ocean region have implemented these provisions.

In accordance with the Convention, States have sovereignty over these waters, but the exercise of their sovereignty is subject to observing certain commitments. All ships and aircraft are given right of "innocent passage" through or over territorial waters without hindrance from the coastal State so long as they do not violate its sovereignty.

States have the right and duty to oversee that all ships passing through their territorial waters observe the generally accepted international rules with respect to safety at sea and the control of pollution from ships. Where ships come into port, a country can exercise even greater controls as a port State.

Some States lie adjacent to important navigational routes, which are considered international straits. The Convention provides for the right of transit passage through such straits for ships and aircraft. The Indian Ocean has six important international straits: the Bab el Mandeb in the Red

Sea; Hormuz in the Gulf; and Lombok, Macassar, Malacca, and Singapore in the East Asian Seas.

Archipelagic states

The Convention's Archipelagic States concept is significant for certain island States in the Indian Ocean. The Comoros, Indonesia, the Maldives, and the Philippines have incorporated this concept into their national legislation. It provides that straight baselines can be drawn across all the islands making up an archipelago, and from those baselines all other maritime zones extend outwards.

This has resulted in substantial increases in the areas which come under the sovereignty or exclusive jurisdiction of these island States. Indonesia's area of jurisdiction, for example, has increased over 3.1 million sq km of territorial sea and 2.7 million sq km of Exclusive Economic Zone (EEZ).

The establishment of sea lane passages by archipelagic States enables them to regulate sea and air traffic within their jurisdiction. Control can also be established in straits used for international navigation.

In Indonesia trawlers are prohibited from fishing within ten miles from the shore.



For example, collisions of vessels in the Malacca Straits have caused severe pollution. The sea lane passages established in the Straits of Malacca have helped to reduce the risk of major accidents and thereby decrease marine pollution.

Exclusive rights

The Exclusive Economic Zone (EEZ) is a new concept. It enables coastal States to claim exclusive rights to the living and non-living resources across a belt of 200 nautical miles from the shore. It is hoped that this concept will enable coastal States to implement better conservation measures to protect the fish stocks of the world.

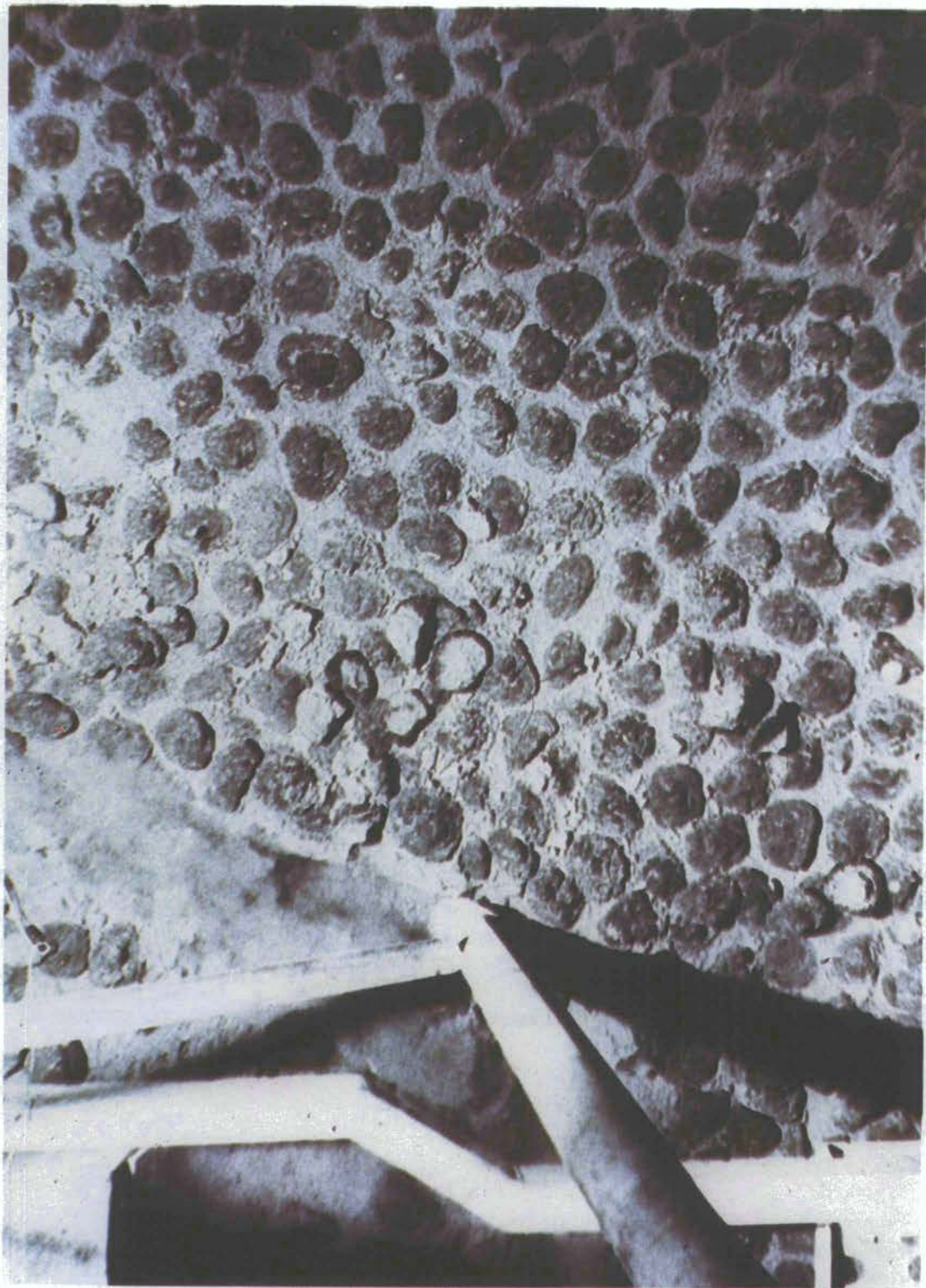
Undoubtedly there is no other part of the Convention which is of greater interest to the Indian Ocean States. Only Iran, Iraq, Jordan, Kuwait, Malaysia, Maldives, Qatar, Saudi Arabia, Singapore, Somalia (which is still claiming a 200-mile territorial sea), Thailand, UAE and Yemen – 14 of 34 States – have not declared such zones. Madagascar has declared a 150 mile zone.

Everybody's sea

The seas beyond national jurisdiction are known as the high seas. In this area all States enjoy freedom of the seas. They must also co-operate in measures to manage and preserve resources of the high seas. This provision will have a significant impact on the Indian Ocean States, particularly in the conservation and management of fisheries in areas beyond Exclusive Economic Zones. Today there is an increasing demand by Indian Ocean States for co-operation to conserve and manage living resources, including tuna, in the high seas.



Children of the Vezo Tribe in Madagascar. Conservation is needed to protect fish stocks for everyone, not least for people who depend on them for their subsistence.



Manganese nodules. Under the Law of the Sea Convention, the deep sea floor, with its nodules containing valuable metals, has become the "Common Heritage of Mankind."

Extension of land

Most Indian Ocean States have very narrow continental shelves – the submerged extension of land into the ocean. However, under the Convention, coastal States are entitled to claim a shelf of up to 200 nautical miles even though the extension may not in fact be that wide. A nation has sovereign rights over the wealth of its continental shelf, even where this extends beyond 200 miles. The Convention does not permit a State to claim rights beyond 350 miles.

This provision has benefited several Indian Ocean States, especially those in the southern part of the Bay of Bengal who have gained sovereignty over a large area of extended seabed.

Common heritage

The Convention introduces another new concept by designating the International Seabed Area. The "Area" refers to the ocean floor and subsoil beyond the limits of national jurisdiction. The Area is mostly in waters 3 to 5 kilometers deep and extends over largely uncharted ocean floor. The Area and its resources have been declared the *Common Heritage of Mankind*.

An International Seabed Authority (ISA) is to supervise all exploration for, and exploitation of, resources in the Area. The ISA has an operational arm called the "Enterprise" through which it can undertake mining operations and enter into contracts with private and state ventures to extract minerals found on the sea floor.

Currently, seabed resources arousing the most commercial interest are "manganese nodules", abundant in both the Pacific and Indian Oceans. In addition to manganese, the nodules contain cobalt, nickel and copper.

A resolution adopted along with the Convention entitles States and private companies which have invested in seabed mining to register as "Pioneer Investors". India was the world's first Pioneer Investor to be given rights to seabed mining in the Indian Ocean. At present it is the only country of the region expected to be commercially involved in mining the seabed for manganese nodules.

Exploitation of the nodules could be a boon to Indian Ocean economies. Under the terms of the Convention, even nations which are not involved in mining will be entitled to share the benefits of this "common heritage". The projected mining may, however, cause problems for the marine environment.



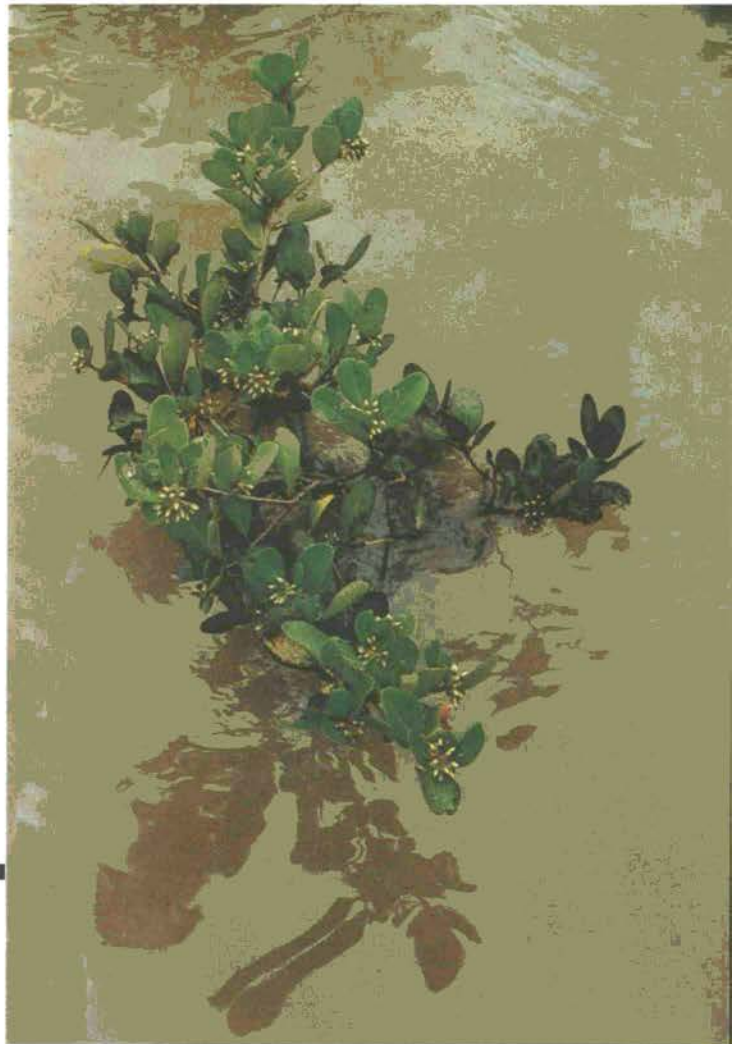
A coastal factory. The Regional Seas Programme has helped Indian Ocean states to develop common environmental standards with regard to effluents which are hazardous to ecosystems and human health.

Help for self help

The Convention places great importance on providing developing State with scientific and technical assistance in marine science, either directly or through competent international organizations. In accordance with this principle, the UNEP Regional Seas Programme, through its action plans in the Indian Ocean region, plays a major role in assisting developing States to help themselves in protecting the marine environment. Programmes that represent the common experience and needs of all nations of the region are being developed and implemented. These include:

- Setting up effective institutional arrangements for research and monitoring of pollution.
- Establishing a regional network of institutions and laboratories which will participate in programmes of common interest.
- Supplying necessary equipment to the laboratories.
- Training national personnel.
- Standardizing analytical techniques and procedures in laboratories to enable the comparison of results.
- Conducting monitoring programmes in all regions in principal problem areas.

- Identifying the possible effects of climate change and sea level rise in the region.
- Studying the effects of pollution on marine habitats such as mangroves, coral reefs and seagrasses.
- Developing common emission standards for substances which are hazardous to human health or the ecological balance.
- Facilitating easy exchange of information within the region.
- Publication of reviews and guidelines for assessment of the present levels, trends and effects of marine pollution.
- Preparation of reference materials for intercalibration of sampling and analytical techniques.
- Publication of regional marine science directories.



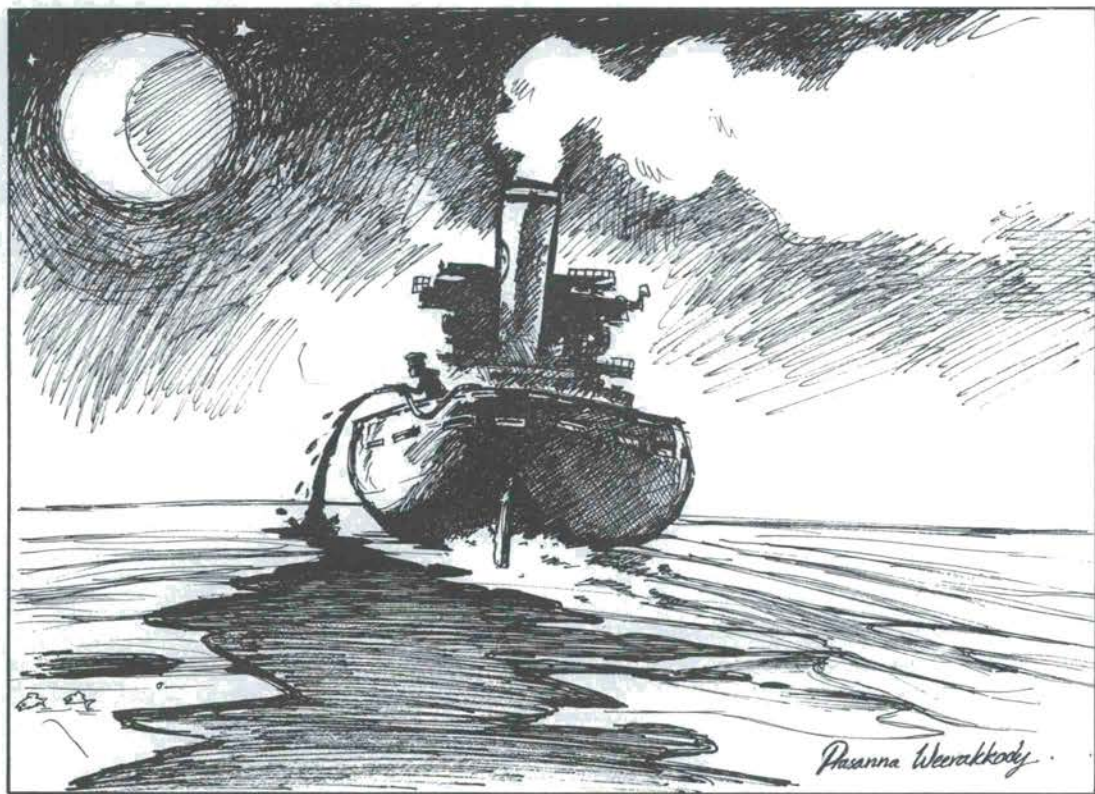
Programmes are under way to study the effects of pollution on marine habitats. This young mangrove tree in the waters of Hong Kong is covered with oil.

Ship pollution

A problem common to almost all the States of the region is ship-generated marine pollution. The Indian Ocean is the busiest tanker traffic route in the world. Tankers carrying almost 500 million metric tons of crude oil pass through the Indian Ocean region each year, mostly to meet the fuel needs of the industrialized countries. Discharges from vessels are the source of approximately 46 per cent of all the petroleum introduced into the ocean. Oil slicks caused by the flushing of tanks and dumping of oily ballast are frequent occurrences along the region's tanker routes.

Several accidents resulting in oil spills have also occurred in the region, among them the sinking of the ENNERDALE off the Seychelles, the grounding of the TAYUB on the reefs of Mauritius, the grounding of the tanker TRANSHURON in the Laccadives, the grounding of the SHOWA MARU at Buffolo rock in Indonesia, and the sinking of a number of vessels in the Iran-Iraq War. These have spilled large amounts of oil into the Indian Ocean. Most is washed onto the coasts by the ocean currents. As a

Gone are the days when masters of vessels could deliberately discharge ballast or wash out their tanks in coastal waters with impunity.





Beaches in the region are threatened by oil pollution. Tar balls are washed ashore by waves and currents.

consequence, some beaches have become heavily contaminated with tar – the solid residue of crude oil. Coral reefs and mangrove forests have been affected by oil because of their proximity to marine tanker routes. Heavy tar ball pollution has been reported from Indonesia, Kuwait, Oman, and the Seychelles.

The Law of the Sea Convention focused much attention on this problem. As it envisaged, the International Maritime Organization (IMO), acting as the competent global organization, has adopted international rules and standards to prevent, reduce, and control pollution of the marine environment. As a result, coastal States now have a new legal right to safeguard the marine environment from ship-generated marine pollution.

Ships that sail in the night

The global instrument for controlling marine pollution from ship sources is the 1973 International Convention on the Prevention of Marine Pollution from Ships (amended in 1978), developed by the International Maritime Organization and known as MARPOL 73/78. The Law of the Sea Convention sets forth the jurisdictional framework specifying the rights and responsibilities that States may exercise as flag States, as port States or as coastal States. As required by the Convention, IMO continues to elaborate international rules and standards which all shipping around the world is expected to observe.

In the past, masters of vessels took it as an unrestricted right to pollute in whatever amounts they chose irrespective of the consequences. Damage from ballasting operations was excluded from liability. This resulted in a



Fur seal caught in an oil slick off the African coast.

large number of vessels discharging their ballast in the coastal waters of Indian Ocean States. Under the new Law of the Sea, and under MARPOL 73/78, vessel captains who deliberately discharge or do not report accidental spills of oil can be made to bear the full costs, no matter where the violation occurs.

Fighting pollution

The danger of accidental spills as a result of collision at sea is growing with the ever increasing size of the supertankers carrying oil across the Indian Ocean. The rise in offshore oil production in the Indian Ocean has also increased the potential for major oil spills from blow-outs or leakage. The Law of the Sea Convention obliges States to develop contingency measures to deal with pollution incidents in the marine environment.

How well could Indian Ocean States respond to such emergencies?

Until recently Indian Ocean States were unable to effectively deal with any major oil spill. Today, however, as a result of developments under MARPOL 73/78 and assistance provided by IMO, particularly through the UNEP Regional Seas Programme, member countries in the region have developed the capability to respond to such emergencies.

The Regional Seas Programmes covering Eastern Africa, the Red Sea and Gulf of Aden, and the Kuwait Action Plan region have all adopted protocols concerning co-operation in combating marine pollution in cases of emergency. In 1985 eight countries in the Kuwait Action Plan region

established a Marine Emergency Mutual Aid Centre (MEMAC) in Bahrain. Its purpose is to promote and integrate regional and national antipollution measures and to ensure that speedy assistance is provided where necessary. Another important task of MEMAC is to help government personnel to combat oil pollution resulting from maritime incidents. A similar centre is being established for the Gulf of Aden and Djibouti. Other centres are planned in other parts of the Indian Ocean.

The countries of East Asia have adopted several contingency plans to combat marine pollution in their region. They include the Association of South-East Asian Nations (ASEAN) Contingency Plan, the Malacca Straits Contingency Plan, the ASEAN Council of Petroleum (ASCOPE) Plan for the control and mitigation of marine pollution, and subregional arrangements in the Sulawesi Sea area. UNEP has been assisting these countries to simplify regional oil spill contingency planning and, in 1988, approved a programme to provide technical and scientific support.

The need to take steps to protect the marine environment as laid down by the Convention has led to the recognition of Special Areas which require more rigorous management attention. Recently the Gulf of Aden became a Special Area under MARPOL 73/78. This prohibits ships from discharging oily wastes, ballast waters, or chemicals into the Gulf of Aden as from April 1989.

Everybody's back yard

The Convention puts a responsibility on all States to prevent, reduce and control ocean dumping of wastes, even though dumping is not the most severe nor the most extensive of the ways in which the ocean is polluted.

The coastal zones of some developing States of the Indian Ocean have been used, often without the States' knowledge or consent, for dumping poisonous wastes. For example, concrete cylinders filled with radioactive or toxic wastes have been offered to Indian Ocean States for use in the construction of coastal protection structures. Another case involved a vessel, laden with 14,000 metric tons of incinerator ash, that tried to dump its cargo in the Indian Ocean. The vessel was refused entry into the waters of Sri Lanka, the Philippines and Singapore. It later arrived in Malaysia minus its cargo.

The Law of the Sea Convention gives States the right to regulate dumping in their territorial sea or EEZ, or onto their continental shelf, thus reinforcing the 1972 London Dumping Convention. In 1989, an international convention to control the transboundary movement and disposal of hazardous waste was finalized under the auspices of UNEP. When in force, this new Convention, together with the London Dumping Convention, will greatly strengthen international law on ocean dumping. It will mean that no longer can ships laden with toxic wastes be allowed into the waters of Indian Ocean States without notification. All signatories will have the right to refuse entry.

Waste from land

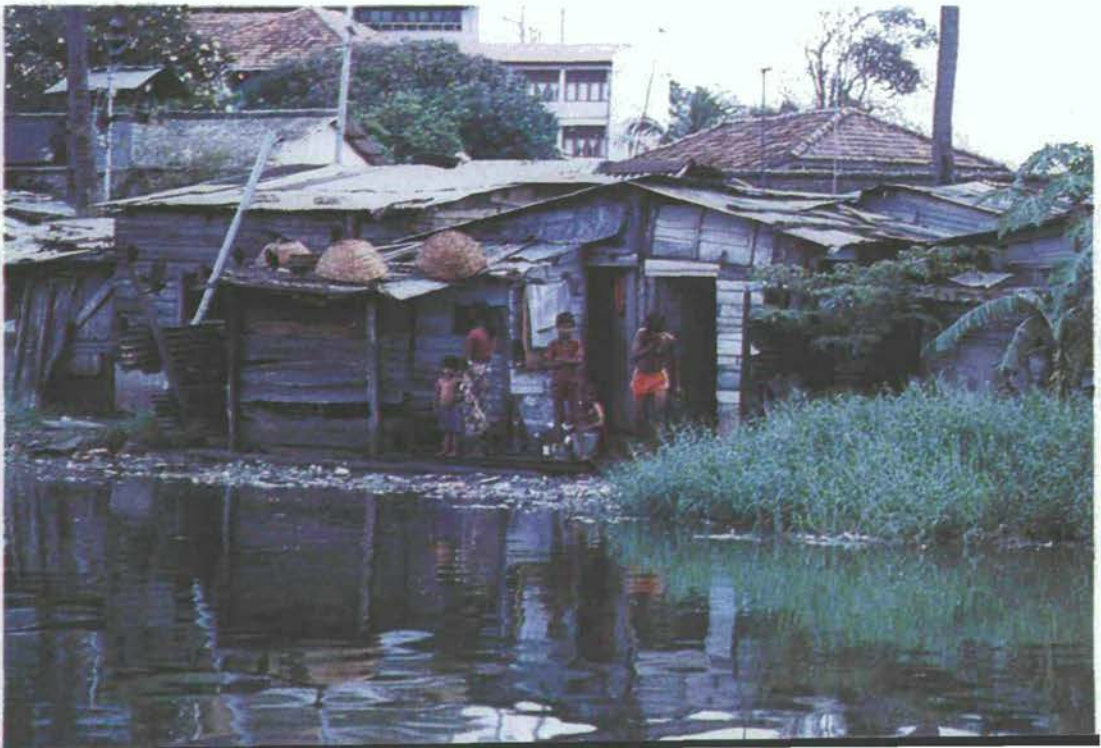
A significant portion of all ocean pollution originates on land; scientists have estimated that about 60 per cent of the problems affecting the coastal environment come from land-based sources.

The inability to cope with increasing amounts of municipal wastes, resulting from rapid urbanization, has magnified the problem of coastal pollution. The overwhelming majority of States in the Indian Ocean region lack basic sewage treatment facilities and discharge raw sewage directly into the ocean. This has become a major problem in the fast-growing city centres of eastern Africa, South Asia and East Asia.

Effluent rich in organic matter and nutrients finds its way into the coastal waters from the domestic out-flow of the cities. Industrialization over the past decades has resulted in highly toxic effluents being discharged directly into bays and lagoons, later reaching the ocean. Fertilizers and pesticides used in agriculture also end up in streams that flow into the ocean. Algal blooms are increasing in frequency and scale, causing great concern especially in the Kuwait Action Plan region.

These blooms are basically massive colonies of microscopic plants called phytoplankton. Scientists link the blooms to the increased amounts of nitrates and phosphates brought into the sea through human and industrial waste discharge. The nutrients cause the phytoplankton to reproduce at an alarming rate, and in the process use up all the oxygen

Rapid population growth in most coastal states of the region has aggravated pollution.



available in the water. Without oxygen, fish suffocate and die in enormous numbers.

Problems of marine pollution have become increasingly apparent throughout the region. More comprehensive national anti-pollution legislation is needed to minimize pollution from land-based sources. The legislation called for in the Convention is now being put into force by many Indian Ocean States.

Thus, all of the four UNEP Regional Seas Programmes in force in the region have given priority to the development of protocols dealing with pollution from land-based sources. All action plans of the Regional Seas Programme have provisions regarding measures to prevent, reduce, and manage waste from land.

The first of these protocols in the Indian Ocean was in the Kuwait Action Plan region, adopted early in 1990. An 18-month monitoring programme for marine pollutants and an oceanography research project dealing with coastal waters were carried out in the region. This has helped to identify sources of pollution. Sedimentation, industrial effluent, and domestic garbage are the most serious sources of pollution from land. The protocol, when in force, will require governments to restrict the release of dangerous chemicals into the oceans and to control and license the release of chemicals considered to be less dangerous.

Through a very comprehensive survey of pollution from land-based sources, the countries of the East Asian region have identified the major threats to the marine and coastal environment. They have now adopted a strategy to control pollution from the disposal of urban, industrial, and agricultural wastes into coastal waters, and have developed guidelines relating to such discharges.

The Regional Seas Programmes of the Red Sea and Gulf of Aden and Eastern Africa have not yet developed legislation on the subject. However scientific surveys to monitor pollution from land-based sources are in various stages of development and implementation. In the South Asian Seas region moves are under way to adopt the Action Plan and initiate pollution monitoring.

Today decision-makers in the developing countries of the Indian Ocean are convinced of the importance of environmental assessment before launching development projects.



Land-based sources of pollution are targeted in the Law of the Sea convention.

Wanton destruction

While land- and sea-based sources of pollution are posing a threat to the marine environment, an even more serious problem is being created by the systematic destruction of the "critical marine habitats" of the region. Critical marine habitats are areas that serve as feeding, breeding, resting and nursery grounds for marine creatures. They are major sources of nutrients, are particularly rich in species, and therefore are highly productive areas. Such habitats are essential for the productivity and very survival of commercial marine species, as well as of rare and threatened forms of marine life. They also help stabilize the coast against erosion by waves and storm surges.

Despite their enormous value as a renewable resource, over 50 per cent of the mangrove forests within the Indian Ocean region have been destroyed in the last 15 to 20 years. Indonesia and India have lost 700,000 and 365,000 hectares respectively. In the Philippines the mangrove area has decreased from 418,990 hectares in 1967 to approximately 146,140 in 1978. Mangroves are being felled for firewood, charcoal and building materials and cleared for shrimp farms, housing, and commercial development. They are also being affected by dredging and land-fill activities, fresh water flooding, and pollution by oil and pesticides.

More than half the mangrove forests in the Indian Ocean States have been destroyed, many to make way for fish farms.



Coral reefs are known to have ecological significance and economic value, but they are being degraded and even totally destroyed throughout the region by sedimentation from land-fill and coastal construction work, dredging and upstream erosion. It has been estimated that nearly 20 per cent have been affected. The removal of coral and coral sand for use in the construction industry has further aggravated coast erosion problems in Seychelles and in Sri Lanka.

Activities such as forest clearing, dam building and construction of harbours, sea walls and breakwaters are contributing to the serious problem of soil erosion and siltation in the region. While large areas of land are becoming deserts, in the sea coral reefs are being destroyed by siltation. Deforestation and the resultant massive soil erosion are the most pressing environmental problems of the Eastern African region.

Seagrass beds are an important shallow water habitat for many marine creatures and are among the most productive of natural ecosystems. The dense forest of seagrass blades supports a variety of fish, who obtain both shelter and food directly or indirectly from the grass beds. Large areas of seagrass have been lost by extensive land reclamation and by dredging in some Indian Ocean States. In others, industrial and agricultural run off, sewage discharge and overfishing have led to the destruction of seagrass beds. It has been estimated that 5 per cent of all seagrass beds have been damaged or destroyed.

The responsibility of States, as embodied in the Convention, to protect and preserve the marine environment has greatly increased the environmental awareness among decision-makers in the developing countries of the Indian Ocean. Urgent measures are being taken by a number of States in the region to strictly enforce protective measures covering mangroves, coral and sea-grasses.

Marine parks and reserves already exist and their coverage is to be extended. Several programmes are under way or being developed to study the status and extent of critical habitats and the impact of pollution on them.

In the Kuwait Action Plan region, protective measures are principally focused on reducing the loss of mangroves and other critical habitats, whether through deliberate destruction or indirectly through oil pollution and coastal land-fill. Iran has declared 80 per cent of its existing mangrove forests as protected areas. Saudi Arabia and Bahrain have enacted laws to prevent dumping of land-fill on mangroves and inter-tidal flats. Detailed studies of corals and associated fauna have been undertaken in all Kuwait Action Plan countries. Iran, Saudi Arabia, and Kuwait have established several new reserves to protect coral reefs and other marine life.

Since the adoption of the Law of the Sea Convention in 1982, the Red Sea and Gulf of Aden programme (PERSGA) has assisted in the establishment of a marine park at Aqaba and carried out several surveys for the establishment and management of national parks and protected areas in Saudi Arabia, Sudan, Egypt, Jordan and Yemen.



Considerable attention has been given to the study of mangroves, sea-grass beds and coral reefs in the East Asian region. A major regional study to evaluate the present status and extent of mangroves has been undertaken by the Regional Seas Programme for the region. All East Asian nations have taken steps to establish marine parks for the conservation of critical habitats. In early 1986 Indonesia had 400,000 hectares of marine reserves and it plans to increase this to 10 million hectares over the next few years. A regional report on the status of ecosystems in South-East Asia and the impact of pollution has been published by FAO and UNEP.

Eastern African countries have become aware of the dangers to critical habitats caused by the discharge of waste including sewage. With a high percentage of the region's coral reefs completely or partially destroyed, Kenya, Mozambique, Seychelles and Mauritius have now established marine parks for the protection of coral reefs.

In the South Asian Seas region, considerable destruction of mangroves has necessitated urgent measures to protect them in parks and reserves.

In Bangladesh, mangroves are protected in the Sundarbans ecosystem; in India, in the Gulf of Kutch. The coral reefs in the region are threatened with destruction and governments have become more aware of conservation measures needed to protect them. In India, steps are being taken to improve conservation activities in the Gulf of Kutch, Palk Bay and Gulf of Mannar, the islands of Lakshadweep, the Andamans and Nicobar. In Sri Lanka new marine parks are being established to protect that country's reefs, and the Maldives recently adopted management measures to protect coral reefs.

In 1989 UNEP and IUCN – the World Conservation Union – published a comprehensive three-volume reference work entitled *Coral Reefs of the World*. It discusses the status and distribution of reefs in the Indian Ocean and the measures needed for their conservation and sustainable use.

Opposite: heavy rains in Madagascar fill a river with silt.

Below: the Sabaki River in Kenya empties its load of sediment into the ocean.



Animals in peril

Several vulnerable marine species in the Indian Ocean region – including whales, dugongs and turtles – are threatened by direct exploitation, pollution and habitat destruction. The Law of the Sea Convention has given coastal States the right to prohibit, limit, or regulate the exploitation of marine mammals. It also urges States to co-operate with the relevant international organizations in the conservation of marine mammals.

The International Whaling Commission (IWC) has already declared the Indian Ocean a sanctuary. At a meeting in 1989, fourteen international organizations agreed to co-operate closely to save endangered marine mammals. UNEP, together with these organizations, will play a major role in helping Indian Ocean States to save endangered marine mammals through the Global Plan of Action for the conservation, management and utilization of marine mammals.

Marine mammal conservation is receiving increasing public attention in the Indian Ocean region.

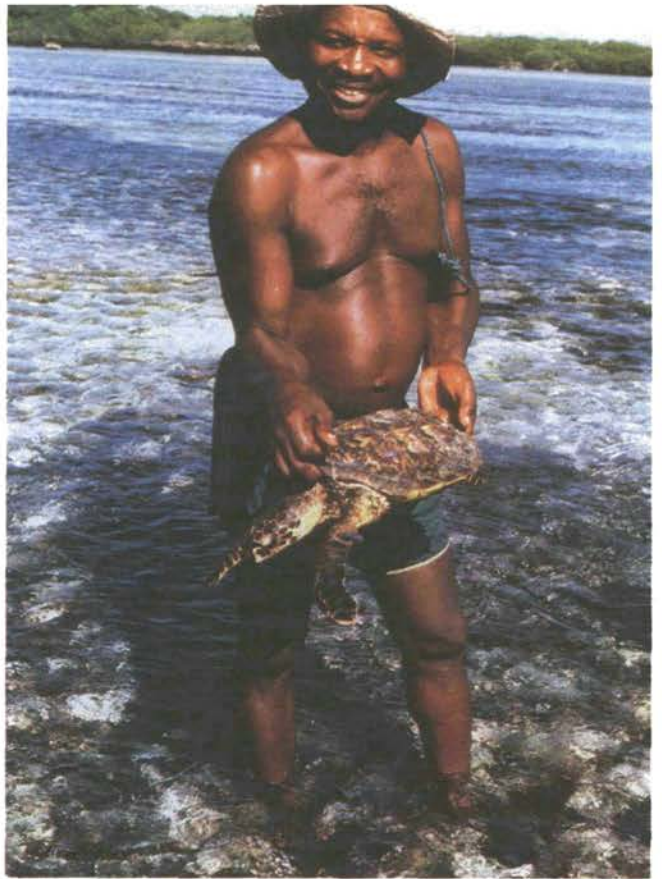


These activities have helped to protect the tiny Indus river dolphin in Pakistan and other cetaceans in the Indian Ocean. Other projects include: sighting and counting of minke whales in the Antarctic, and identifying and conserving marine habitats for dugongs in the waters of Saudi Arabia. Several Indian Ocean States have already developed programmes for marine mammal watching and collection of data on marine mammal mortality. In general there is increased public awareness in the Indian Ocean to conserve, protect and manage marine mammals.

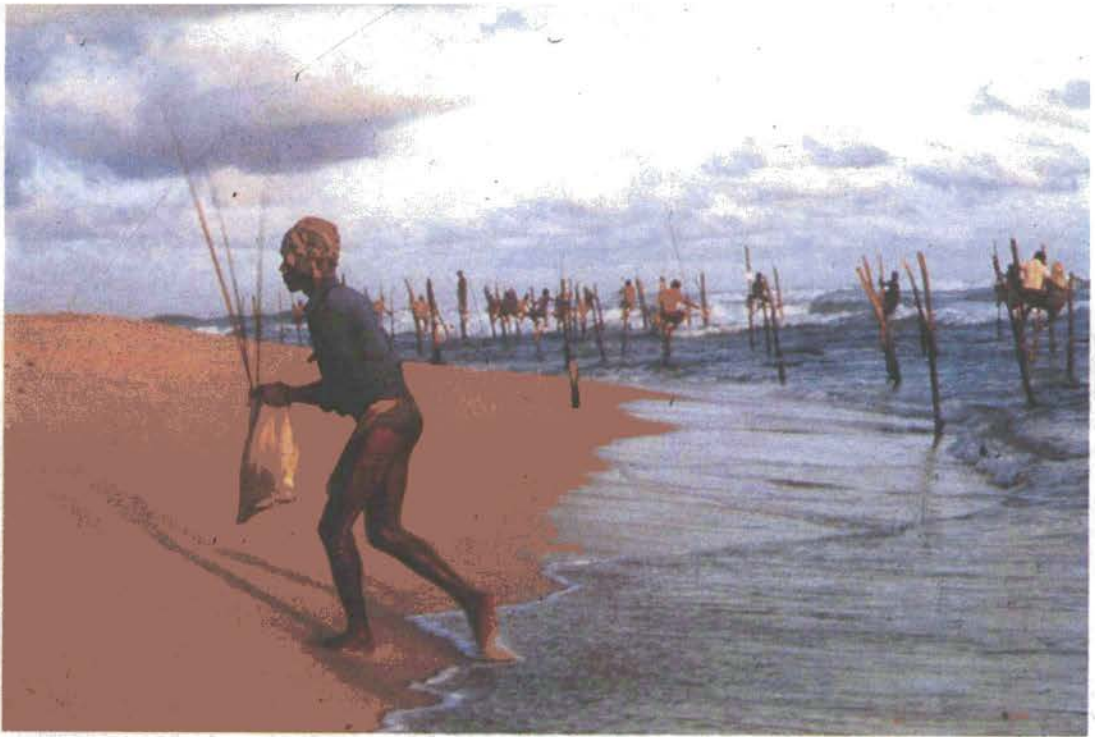
Five species of marine turtles are found in the Indian Ocean of which four are considered to be endangered. They are threatened mainly by poaching, encroachment of tourism into their habitat, and accidental entanglement in fishing nets.

The international Law of the Sea and UNEP's Regional Seas Programme have excited the interest of the peoples of the coastal States of the region in conserving and protecting endangered marine species. This has resulted in the adoption of legislation in many Indian Ocean States for the protection and conservation of marine turtles. The world's largest nesting ground of the loggerhead turtle is found on Masirah Island in Oman. Here turtles are conserved and harvesting is prohibited. In Indonesia and Malaysia, which come within the East Asian Seas region, turtles are protected by law. Twenty-one turtle nesting beaches in Malaysia are safeguarded. All turtles in the South Asian Seas countries of Pakistan, India, and Sri Lanka are shielded by law although enforcement is difficult. In the Eastern Africa region certain species of turtle are protected in Reunion and Seychelles.

Seabirds breeding in the Indian Ocean are threatened by human activities, and the number of Pelicaniforms (boobies and frigate birds) appear to be declining. In view of this, some Indian Ocean States have established reserve where seabird colonies are found. Major seabird nesting islands in Indonesia, Malaysia, Philippines, Tanzania, Saudi Arabia, Seychelles and Somalia are protected.



This hawkbill turtle is part of a tagging project in the Aldabra islands.



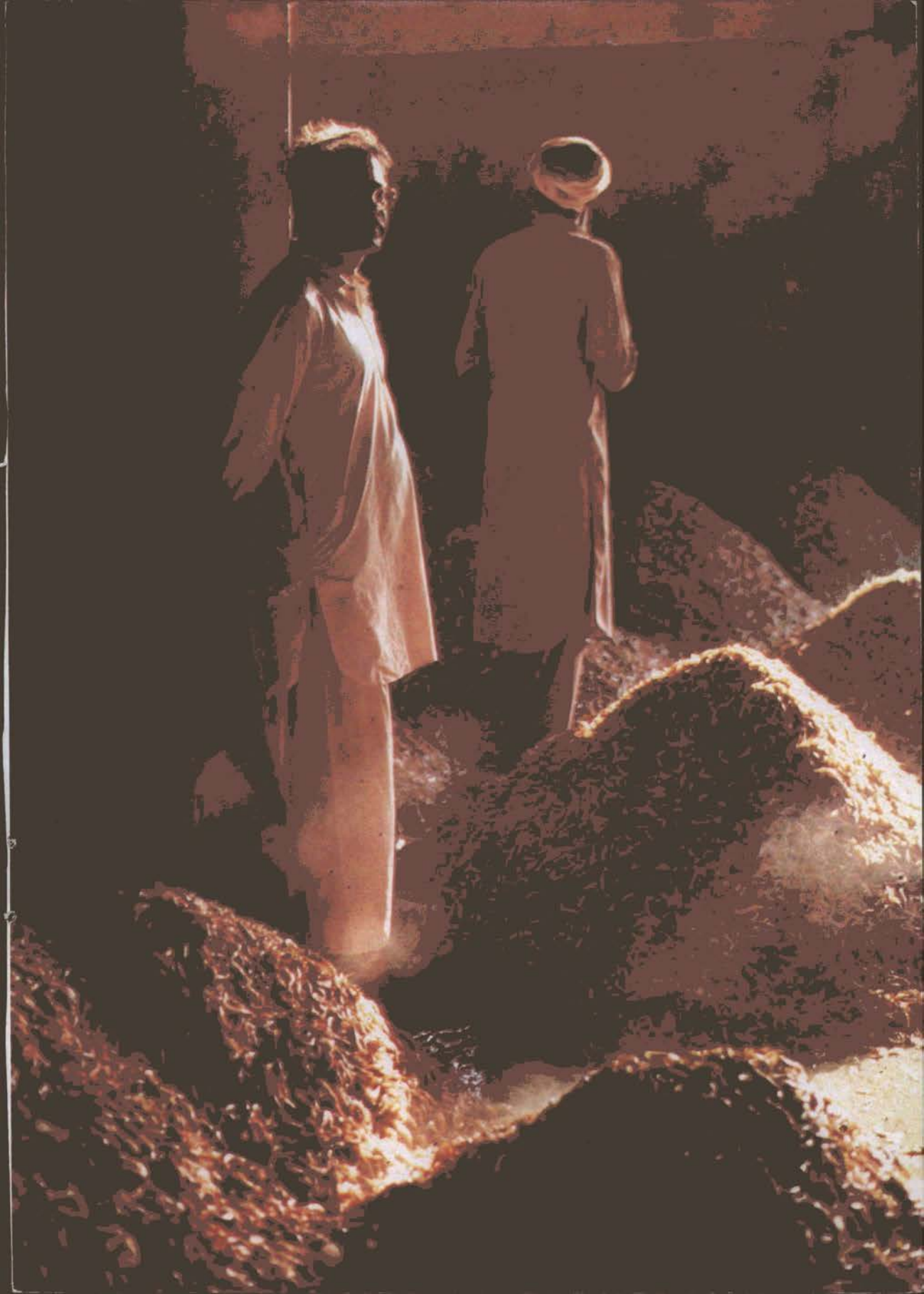
Everywhere in the Indian Ocean, human populations are growing rapidly and swelling the demand for food from the sea.

*Above: "the fisheries of the stick" in Weligama, Sri Lanka.
Opposite: prawns for sale in Karachi, Pakistan.*

Food for billions

The importance of fisheries to the people of the Indian Ocean cannot be stressed enough. From the ocean come half or more of the total animal protein to feed a growing population of more than one billion. Traditionally fisheries in the Indian Ocean have been small-scale and concentrated in the coastal areas. A few countries like India, Pakistan, Seychelles and Thailand have recently developed large industrial fisheries. However, even today artisanal fisheries account for more than 90 per cent of the total fish catch of about 4 million metric tons.

The new legal regime established by the Law of the Sea Convention was quickly reflected in the national policies and legislation of Indian Ocean States. As a result of the new Exclusive Economic Zones, nearly 50 per cent of the Indian Ocean fisheries now fall under some national jurisdiction, providing a longneeded opportunity for the rational, well managed exploitation of these resources. However, the declaration of Exclusive Economic Zones by the countries bordering the Gulf of Thailand and the Andaman Sea has resulted in Thailand losing 760,000 sq km of fishing grounds.





Capture of berried female lobsters is prohibited in some Indian Ocean States in order to prevent exhaustion of the resource.

The Law of the Sea offers Indian Ocean coastal States a better framework for the management and development of their marine fisheries. Under the Convention, each coastal State must ensure the sustainable development of EEZ resources through proper conservation and management measures. They must determine total allowable catches and also ensure optimum utilization. Thus if there is a surplus, they are obliged to give access to others who would then be governed by the coastal State's regulations drawn up in accordance with the Convention.

In view of the rapidly increasing number of incidents of overfishing of shrimps and lobsters in the region, several States of the Indian Ocean have adopted legislation to regulate fishing in coastal areas. In the Kuwait Action Plan region the shrimp fishery is regulated by permitting fishing only during certain periods. In the Red Sea and Gulf of Aden region there is a restriction on the number of vessels fishing lobsters, and fishing of berried females is not allowed. In Eastern Africa, management measures in the shrimp fishery include closed seasons, control of minimum mesh size for nets, and limitation on catches. The countries of East Asia have introduced regulations delineating fishing areas according to the type of vessel. Other measures include a licensing system and limiting the number of vessels and allowable mesh size. There is also a ban on trawling in specified fishing grounds and the closure of fisheries during spawning seasons. Management plans in the South Asian Seas region are aimed mainly at regulating the type of vessels in distinct fishing zones and banning the use of explosives.

Fishing without bounds

The Convention has special provisions for the highly migratory species of fish for which economic zone boundaries are irrelevant. The coastal States and others whose nationals fish for these species, both within and beyond the Exclusive Economic Zones, are required to co-operate to ensure conservation and to promote the objective of optimum utilization. The Convention highlights the necessity for coastal States to co-operate either directly or through international organizations.

Although the tuna fishery in the Indian Ocean is not the largest single species fishery, it is very significant to the region. Tuna are a very valuable and highly migratory species, and crucial to the developing States of the Indian Ocean as a foreign exchange earner. In recent years there has been an increase in the number of foreign fishing vessels in the region, and a large purse seine fishery has been developed by the French and Spanish. Traditional distant water fishing fleets of the Soviet Union, Japan and more recently South Korea and Taiwan are also active in the Indian Ocean region.

Skipjack tuna at a landing site in Sri Lanka. The Convention promotes optimum utilization of highly migratory species of fish in the Exclusive Economic Zone and beyond.





A fish market in Jakarta, Indonesia.

The rapid increase in foreign fishing vessels, and the concern of the coastal States about the possible effects of their activities on the traditional coastal tuna fishery, have raised the question of how best the resources can be managed.

Following the Law of the Sea Convention, foreign vessels are allowed into the Exclusive Economic Zone of many Indian Ocean States to fish tuna under bilateral agreements or through joint venture projects. It is no longer possible for vessels to fish as they did in the past, when it was literally "catch as catch can" with no thought for conservation. Nearly all the regulatory measures taken so far by the coastal States under national, bilateral or regional auspices have invoked provisions of the Convention. Distant water vessels operating in the Indian Ocean now have to take on board observers from the coastal States. They are permitted to catch only a certain amount of fish and must provide all data regarding the fishing activity in the Exclusive Economic Zone to the host country.

Indian Ocean States are now co-operating with the Food and Agricultural Organization of the United Nations (FAO) and the Indian Ocean Marine Affairs Co-operation (IOMAC) in establishing an appropriate regulatory mechanism for tuna management.

The emergence of the Convention has also greatly increased interest in fisheries research and has led to an increase in total research effort in the Indian Ocean.

Scientific research

Before the international Law of the Sea, ocean scientists conducted their investigations in the Indian Ocean when and where they wished. Of course, nations had full jurisdiction over all scientific research activities in their internal and territorial waters which, in most cases, extended up to three nautical miles offshore. But scientists, mainly from the developed countries, took samples of water, biota, and even the seabed while passing through the territorial seas of Indian Ocean States and only informally notified the State having jurisdiction. Often this notification was made through the scientific colleagues of the nation concerned. Scientists in developing countries were not in a position to monitor such research and coastal States became extremely wary of the possibility of such scientific expeditions being used as a cover for political espionage or economic benefit.

Under the Law of the Sea Convention, all States are required to co-operate in advancing humanity's scientific knowledge of the ocean. Since much research can have commercial significance, only the coastal State can authorize research in the EEZ or on the continental shelf. Foreign

A scientist records data on corals near Oman. States have control over research carried out in their EEZs.



researchers must obtain its prior consent, but this cannot be withheld unreasonably. The coastal State also has the right to participate in any project, either actively or as an observer, to share equally in any data obtained, and to be given assistance in interpreting such information if required. The majority of the developing States in the Indian Ocean, which lack both economic and technical capabilities for conducting marine scientific research, clearly stand to benefit from the Convention.

The right of coastal State scientists to participate in cruises in the Exclusive Economic Zone of that State has proved to be very useful. Already a number of Indian Ocean scientists have been afforded the right of participation in oceanographic cruises carried out by vessels of the USA, USSR, UK, France, Germany and India. This has enabled coastal States to gain much-needed information to evaluate the resources potential of their Exclusive Economic Zones. Scientists in developing States have been able to familiarize themselves with state of the art technology in use in ocean research and make valuable professional contacts. Many scientists have also had the opportunity of taking part in the analysis and interpretation of Indian Ocean data in laboratories of developed states. As a result a great deal of valuable data about the Indian Ocean has been collected and published.

Indian Ocean scientists are now able to participate in the Ocean Drilling Programme, thanks to provisions of the Convention.





Where do we go from here?

The United Nations Convention on the Law of the Sea continues to provide the Indian Ocean States with a focus for ocean related activities. It has attracted increasing support world-wide and two thirds of the ratifications needed for its entry into force have already been received. As more and more Indian Ocean States resort increasingly to the oceans to supplement their development needs, there is a marked trend towards implementing the provisions embodied in the Convention regarding the conservation, protection and management of the marine environment. The future will see an increased interest from the Indian Ocean States to benefit even further from the uses of the sea and its resources.

International organizations will have to respond to these needs by developing appropriate programmes and activities that reflect the new regime for the oceans established by the Convention. Thus UNEP will play an even more important role in helping Indian Ocean States to implement the provisions in the Convention dealing with the marine environment. The Indian Ocean will continue to contribute to the well-being of mankind and these widespread benefits will be fashioned more and more by the Law of the Sea Convention.



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This booklet was edited and designed by Nikki Meith, with technical assistance from the United Nations Office for Ocean Affairs and the Law of the Sea.

UNEP would like to thank the following for their photographs:

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*Issued by the Programme Activity Centre for Oceans and Coastal Areas
of the United Nations Environment Programme*

November 1991



*Back cover: spreading nets in
Karachi, Pakistan.*

