Chapter 5

Small States: Environment and Development

5.1 Small states, especially the islands among them, have certain characteristics which make them particularly susceptible to some kinds of environmental problems. These characteristics include biological features such as rare ecosystems containing valuable genetic resources; topographical features such as steep slopes in close proximity to the sea in volcanic islands, and a flat terrain devoid of watersheds in atoll islands; small variability in climate and soil, encouraging specialisation of agricultural production; fragility of small ecosystems to pests, diseases and certain human activities; proneness in some cases to natural hazards such as earthquakes, floods, droughts and hurricanes; limited technical, financial and administrative capacity to cope with consequences of climate changes; and the closeness of local society.

5.2 The severity of the problems which arise from these characteristics can be better understood by considering small states as a microcosm of the planet Earth. In island small states the extensive interface between land and sea increases the fragility of coastal ecosystems and the demands of coastal management. This is compounded by bio-physical proximity of terrestrial and marine systems, resulting in conflicting developmental pressures. Sea-level rise, storm surges and hurricanes exacerbated by global warming are particular threats to island small states. Limited land area also results in some cases in high pressures of population on resources and on the environment. Resource shortages can encourage deforestation and soil degradation, and both, together with sea water intrusion, can impair what for some small countries is already limited availability of fresh water. For island small states, other problems can arise from the marine environment. Oil spills and other marine pollution destroy coral reefs and mangroves, both of which are neces-

sary for coastal protection. Sewage and other waste disposal can also pose special difficulties. Then there is the large reliance on fisheries and other resources within Exclusive Economic Zones (EEZs), which for small countries are still inadequately managed and protected. Most of these issues are relevant to small islands of large countries as well.

5.3 Consideration of small states as a microcosm also indicates the unique opportunities they provide for research in environmental protection and conservation. For instance, many of these countries provide unique locations for stations to observe and monitor signs of global warming and climate change. They also provide opportunities for rejuvenation of the global heritage in areas such as natural gene banks. However, these countries do not have the technical capacity and financial resources to undertake these tasks. Since by undertaking these activities small states would be serving the whole of humanity, financing them should be recognised as a global responsibility. The current negotiations under UNCED provide an opportunity to make it obligatory for the major industrial countries to provide additional financial resources for these purposes.

5.4 Many of these issues are dealt with in other chapters. Here we concentrate on those which are particularly important for small states. But before doing so, we should also acknowledge that small states, although ecologically linked, are often geographically isolated. There is an acute need for support and exchange of experience with others in a similar predicament. Their individual and collective voices need amplification in order to be heard on the world stage.

5.5 There is a typical set of issues that affects small states with particular severity. It includes: the threatened rise in sea level due to climate change; the greater demands on coastal zone management; the fragility of water resources and the risk of their contamination; risks from the movement of hazardous waste; problems of managing the impact of tourism; supervising the use of EEZs; controlling waste management; and dealing with the population pressures which often arise from limited land space. Attention is also needed to remedying the weaknesses of these states in the international system, and especially to ways in which they can be assisted to get their interests better articulated and represented in international forums.

5.6 These problems are exacerbated by certain of the socio-cultural characteristics of many small states. Decisions relating to recruitment and promotion are not based mainly on efficiency criteria due to the closeness of local society in these countries. This also affects political processes.

5.7 In Chapter 4, we discussed the scientific evidence on global warming and its major consequences, together with the kinds of remedial action that

are required at this stage. Here we examine those aspects and actions which have special relevance to small states.

Major Economic Activities

Agriculture

5.8 Agriculture and tourism, two important areas of economic activity in small states, are especially vulnerable to the environment. In the case of agriculture, climate change could have serious consequences beyond land degradation and salination problems, because of the tendency towards specialisation in a few crops.

5.9 This tendency is encouraged not only by the difficulty small states have in meeting the scale requirements of large export markets but also because these states have little variability in climate and soils. Changes of climate can have particularly severe impacts on the one or two commercial crops that are grown, and if the countries concerned have difficulty in adapting, then their products would become increasingly uneconomic. However, if the change in climate is gradual, it would allow time to adjust, either through the development of more adaptable varieties or through a switch to other crops. But even successful adjustments have costs, and these could be economically debilitating for small states. Where climate change causes an increasing incidence of hurricanes, vulnerable countries such as those in the Caribbean Sea and in the Indian and Pacific oceans would face increased burdens from wind damage. These burdens are already severe, since for small states, damage to agriculture can be extensive and even cover the whole country.

Tourism

5.10 In the case of tourism, the threat arises mainly because of the large impact of sea-level rise and storm surges on beaches and coastal areas, on which the sector greatly depends. Where climate becomes less pleasant, there can also be adverse effects. Tourism also impacts on the environment. Some of these impacts are favourable and provide revenue to improve the landscape and other aspects of the environment, but others have costs caused by aggravated problems such as waste management and marine pollution.

5.11 Maximising the benefits from tourism often requires the careful management of coastal zones (see Box 5.1 opposite). The coasts of islands and small coastal states are subject to pollution from oil leaks and spills and from various discharges of contaminants from tankers. They are also polluted by the careless disposal of domestic and industrial wastes. Apart from erosion, the unregulated mining of beach sand for construction purposes has contributed to the loss of beaches, as in the Maldives. In Barbados, it has been reported that beaches on the island's west coast are disappearing at the

Box 5.1

Mauritius: Protection of the Marine Environment

Mauritius has a booming tourist sector. But this could change if the lagoon, reef and estuarine ecosystems which are under constant threat of pollution from agriculture, domestic waste and indiscriminate fishing practices, suffer irreversible damage. The economic consequences of such an eventuality can be immense for an island economy which is heavily dependent on tourism for foreign exchange.

Concerned about these issues since the early 1980s, the Government of Mauritius has undertaken several initiatives to minimise the effects of environmental damage and to manage marine resources in a sustainable manner. The main aim of these initiatives is to monitor and collect information about changes in the marine environment in order to facilitate the development of policy measures necessary to resolve major pollution problems.

The initiatives include a study on the impact of sand quarrying and removal on the lagoonal ecosystem which has been used as the basis for Government regulations on sand extraction from the ocean bed; training for local scientific and technical staff in diving techniques and in collecting samples for laboratory testing to check pollution levels; a study on the effects of pollution on the geology and on the ecology of coral reefs; and a three-year project currently underway for developing a data base to monitor variations in the marine environment.

These initiatives have helped the Government in developing an Environmental Action Programme as well as comprehensive environmental legislation as part of a concerted approach to environmental management.

Source: Bheenick[1].

rate of 1.5 metres every ten years[2]. This is largely a result of the pollution of inshore waters and the loss of reefs through the growth of algae. In the absence of reefs, beach sand is eroded, and vegetation barriers are depleted. The problem is caused partly by the presence of hotels, houses and infrastructure too close to the shoreline, and partly by the release of untreated sewage and effluent. Barbados is preparing a comprehensive national programme of coastal zone management which recognises the interaction of natural and man-made events and contains measures for pollution control, amongst other elements.

5.12 Environmental change and social disadvantage can go hand in hand under the inducement of tourism. For instance, in the Pacific, fishing at sea is the role of men, fishing from the beach is the role of women. As the beaches are taken over by tourists, women are displaced, and may be pressured into socially undesirable occupations.

Fisheries

5.13 Coastal zones represent an important part of the world in which environmental degradation is taking place. Fisheries are being depleted, marine pollution is increasing and so is the destruction of coral reefs, mangroves and marshes. Coastal waters and the continental shelf are vital sources of food, yielding more than 90 per cent of the world's fishing catch. Chemical pollution and pathogens from sewage are posing health risks to bathers and consumers of sea-food. In some countries many stocks of shell-fish are being declared unfit for human consumption.

5.14 Fisheries are a crucial resource to be reckoned in global food supplies, as well as a large source of income and jobs. Fishing is an important economic activity in most island states. There is still much dependence on artisanal fisheries which account for about half the world's fish catch. Both deep-sea and offshore resources need careful management if they are not to be depleted—the risks of over-fishing are evident everywhere.

5.15 Fish are also a vital source of protein to many growing coastal populations. Fisheries—both deep-sea and within the EEZ—require good management to prevent over-exploitation. International control is still inadequate in relation to deep-sea fishing and the use of drift nets and other wasteful methods. Traditional agriculture is unable to provide full-time work to all workers, and fishing is a good complement, especially for island and coastal states. Many marginal communities are forced by poverty to continue fishing even when this jeopardises future catches.

5.16 Sometimes there is competition between locally-based artisanal fishing communities and long-range fleets of vessels using industrial methods. Both outside encroachment and excessive numbers of local fishery workers arise in the absence, or breakdown, of adequate management to control access to a fishery. Fish stocks can also be reduced by destructive fishing techniques and marine pollution.Perversely, many aid projects aimed at improving the fishing industry have been inappropriate, and have had the effect of reducing the returns from fishing, an activity which exploits a finite local resource. Women's role in fisheries needs to be recognised and protected.

5.17 It is clearly in the interest of the local population that inshore fisheries be managed sustainably. We are aware of various management options. One of the more promising policy interventions would be the creation of local property rights over fisheries. Exclusive user rights could be vested in local communities, who would have the incentive to conserve and manage their fisheries and protect them against outside encroachment or internal violation. There are also examples of local people having exclusive use of the managed reef fisheries[3]. There has been widespread interest in New Zealand's use of fishing catch quotas, sold for an annual fee. Part of the proceeds are used to buy back quotas from fishermen, thus reducing the total fishing effort.

5.18 Open sea fishing is another vital source of income and food to many island small states. The creation of 200-mile EEZs amounts to forming property rights within countries' waters, which they can either exploit or lease. A number of South Pacific states have accorded fishing rights in their waters to foreign fleets. Ideally, quotas should be fixed within sustainable yields, though in this sector this is a very elusive concept. These arrangements need to be well policed—also no easy matter where the EEZ extends across thousands of square miles of open sea. Climate change and variations in sea temperatures induced under certain circumstances can result in movements of species upon which the local population has become highly dependent for food.

5.19 While local development and enforcement of fisheries management regulations should receive high priority, the methods for supervising and enforcing these regulations are almost entirely lacking. In view of increased poaching, reliance must be put on the international supervision and enforcement of ocean management. For this purpose, an international framework could be developed, similar to the provisions of the International Whaling Commission, to ensure that the usage of high seas is sustainable.

5.20 International cooperation has a role to play in developing specific, environmentally-sound opportunities for using marine resources. *We recommend:*

- *the exchange of experience between member states, drawing on relevant sources of international expertise about the various options of managing inshore waters and artisanal fisheries, e.g. saleable quotas, the creation of local property rights, the formation of users' clubs; and*

- *aid to the fisheries sector which takes account of the need to avoid aggravating the depletion of fisheries.*

5.21 *We also recommend that small states pay particular attention to:*

- *realising the potential of seaweed and other marine algae for food, fuel, animal feed, fertilizers and mulch;*

- *promoting artisanal fisheries, in view of the contribution they can make locally to improvements in nutrition, and internationally to conservation; and*

- *preparing sea-use maps comparable to land-use maps. These should present data on a number of aspects including coastal erosion sites, pollution-prone environments and sea-area zoning.*

Major Eco-development Issues

Climate change and its implications

5.22 Chapter 4 indicated the extent to which some Commonwealth small states are vulnerable to sea-level rise. Because of the large impact flowing not only from this phenomenon but also from storm surges and the possible increasing incidence of hurricanes, we detail below the main consequences for small states:

- loss of land area—which is already in short supply—due to sea encroachment and coastal erosion, leading to reduced shore length and changed shorelines;

- encroachment of the sea into beaches and coastal areas on which tourism greatly depends and on which there is already much tourist-related infrastructure;

- decreased groundwater capacity resulting from reduced land area and salt water intrusion from rising seas;

- increased exposure of freshwater and agriculture to salination;

- reduced food production due to less land area and increased salination, thus increasing dependence on food imports and aggravating food insecurity, exacerbated by population pressure;

- greater incidence of flooding from sea-level rise and storm surges;

- increasing need for human resettlement and precautionary planning of land settlement schemes; and

- increased demand for emigration to continental countries and the growth of 'ecological' refugees[4].

5.23 For some of these refugees, the cost of settling into an entirely new environment and a new culture could add dearly to the psychological and social strains expected of a displaced community. The host countries are likely to have insufficient support services to accommodate new arrivals. Competition for scarce resources and facilities will intensify. The problems must be addressed sooner rather than later if the ecological refugees created by climate change are to be assured of food and shelter from their future host country or community. The climate change convention now under negotiation offers an excellent opportunity to begin to put in place provision of humanitarian assistance to ecological refugees.

5.24 In Chapter 4 we also stressed the importance of research, evaluation and monitoring of climate change and sea-level rise in individual countries. Some progress is being made in this and some international support has been forthcoming. However, because of the possible larger impact of climate change and sea-level rise on small states, especially island ones, their needs are frequently more urgent than those of other countries.

5.25 Besides technical support that the Commonwealth might give in general meteorological work, it might be useful for the Commonwealth Secretariat to assist in informing small member states about the assistance that might be available from relevant donor agencies. The Secretariat might also assist these states and other members which might need this kind of assistance by arranging training workshops on issues connected with monitoring sea-level rise and climate change.

5.26 Beyond research, evaluation and monitoring, some adjustment and other anticipatory action must also begin in physical planning and economic policy, especially where it is needed for other reasons or can serve other purposes. Here, again, because of the large possible impact of climate change on small states, these aspects require significant attention.

5.27 There are some areas in which adjustment and other anticipatory action can begin in small states, although the remaining uncertainty and other pressing problems must also be taken into account. The reality is that where action is required because of longer-term damage, low-income countries will have to be assisted, since many of them are faced with more immediate and severe problems.

5.28 The construction of sea-defences will be a necessary adjustment to sea-level rise. When urban land is intensively occupied for industrial or commercial purposes and land lease values reflect this use, the construction of sea defences with some associated land reclamation may be cost-effective. According to certain estimates, costs of sea defence construction in Tonga amounted to US$6 million in 1988, while the potential losses from inundation in three areas of the capital city alone were estimated at about US$20

million[5]; in Dominica the cost of building a new sea wall to protect the downtown area of the capital has been put at £4-5 million, which represents a large share of the public investment budget. Such schemes will become increasingly needed if scientific predictions on sea-level movements are borne out. The expense they usually involve, however, means that there is need for more research into low-cost options. Sea defences typify the engineering approach to hazards, but socio-economic adjustments should permeate all aspects of national life.

5.29 For most small states, rising sea levels will not create new conditions but worsen those which are already affecting the environment. Flooding, coastal erosion, and tropical cyclones are not new phenomena, though their incidence is likely to increase and larger numbers of people are likely to be affected. Hazard management must be made an integral part of administration in all sectors of government, not the exclusive domain of a separate department, and thereby absolving the others of their crucial responsibilities. Mechanisms for early warning, disaster management, access to resources, and improved regional and international cooperation require greater attention. The International Decade for Natural Disaster Reduction (1990 to 1999) provides an international framework for this[6].

5.30 Some adjustments have already been made by certain countries for reasons unrelated to sea-level rise. In Tuvalu, salination of agricultural land has been damaging the taro crops. In response, sweet potatoes have been introduced which can be grown hydroponically in coral sand at ground level, thus making them less vulnerable to salt water. Because of frequent flooding, regulations have been introduced requiring the floors of new houses to be raised above ground level—a return to the traditional style—which is an eminently suitable response to increased flood risk.

5.31 In addition to adjustments in the agricultural and housing sectors, other measures likely to be necessary include:

- improved rainwater conservation and management;
- health and environmental health programmes;
- stabilisation of the natural hurricane banks and measures for preventing coastal erosion, including the conservation of natural protective features such as mangroves and reefs; and
- special consideration for people already disadvantaged, such as those in poverty and female heads of households.

5.32 These measures would not only give protection against the initial impact of hazards but also reduce social and economic vulnerability to their effects. Maintaining housing and other buildings also helps environmental

health management. Locally maintained water and food supplies are crucial for self-reliant survival. Global warming reinforces the argument that hazards are a natural component of the environment and are better included as a part of, not separated from, environmental management. The extent and severity of natural disasters could be reduced and contained by the wide-ranging adjustments which are possible.

Coastal zone management

5.33 Although we are considering this issue in a chapter on small states, it has considerable relevance to other countries as well. The symptomatic issues of environmental degradation occur in these states' coastal zones. These issues include threats to coastal water quality and coral reefs from sewage, petroleum and industrial discharges, beach erosion, destruction of mangrove swamps either by pollution, garbage dumps or deliberate clearance, unplanned and uncontrolled hotel constructions on beach front property, construction of marinas and deep water harbours, and increasing visits by cruise boats which leave behind debris and sewage. At the same time, in island small states the coastal zone supports the bulk of the community. It provides the air and sea ports, and major transportation routes by road. But it is also the receptacle of the consequences of land-based activities such as agriculture or industry, resulting in run-off containing eroded soil and pesticide and fertiliser residues, as well as of industrial and domestic wastes. Indeed, in small states which are either islands or have low lying coasts the entire country is effectively a coastal zone.

5.34 Many island small states do not yet have the technical capacity to deal with the complex relationships involved in coastal zone management. The United Nations Convention on the Law of the Sea (UNCLOS) provides a comprehensive enforceable framework for conservation and sustainable use of the seas; but while some nations are applying the treaty already, it has not been ratified by a sufficient number to make it globally effective. All countries should ratify UNCLOS as early as possible. Regional cooperation would help small states to improve coastal zone management and marine protection.

5.35 Because of the importance of coastal zones, both from a narrow economic standpoint and in relation to preserving biodiversity, there is need to develop a world-wide network of protected coastal and marine areas similar to protected terrestrial areas. These are necessary in order to protect coastal and marine ecosystems. The protected areas would serve to replenish marine resources, and should aim to maintain genetic diversity of key species. A global plan for such protected areas should be agreed at UNCED.

Exclusive economic zones (EEZs)

5.36 Under UNCLOS, most small states, particularly small islands, have

acquired exclusive economic rights to vast areas of ocean. However, these countries lack the financial and human capabilities for sustainable exploitation of resources in the EEZs. Many of them are also unable to provide adequate protection against illegal intruders into their EEZs. While international conventions are increasingly bringing in controls to deal with problems such as oil spillage, developing countries which are less well placed to police and take preventative action in relation to violations, remain exposed. Stricter enforcement is required. Regional cooperation would help these countries to improve the management of EEZs. It would also help them through joint programmes of surveillance and development of EEZs. Such cooperation could also include training programmes to train trainers required in terms of enforcing the surveillance and other concerned programmes. The recent Caribbean Oceanographic Research Expedition (CORE) project sponsored by the Commonwealth Science Council is an example of initiatives which should be encouraged and supported.

5.37 *We recommend that small states should:*

- *pool their experience and resources concerning management, research and development, monitoring and policing their EEZs, and all aspects of negotiations with owners of foreign fishing fleets, on a regional basis where this is possible; and*

- *cooperate more closely, among themselves and with others, in developing the satellite surveillance systems that could provide essential information to the countries most concerned.*

Freshwater resources

5.38 The pollution of water resources is a major environmental problem in most islands, which usually have few or no permanent streams or lakes. The lenses of freshwater are often small and easily depleted and contaminated. Wells and bores are readily invaded by saltwater and become unusable for most purposes. Where surface drainage exists, deforestation causes the loss of 'permanent' streams. Groundwater and streams are easily polluted by human activities such as mining, agriculture and manufacturing (e.g. tailings, agro-chemicals, industrial effluents). Human, animal and household wastes are other major environmental contaminants in most islands. Because of the porous soils, the leaching of wastes into the groundwater lens has occurred in some atolls. The indiscriminate disposal of household wastes has led to the pollution of the environment and created more breeding areas for flies and insects. Waste disposal into lagoons damages sea life. Stringent regulations and their effective enforcement are not adequate to solve this problem. To resolve it, appropriate technology to treat the waste needs to be transferred on concessional terms from developed to developing countries.

5.39 As islands develop, tourism and manufacturing compete with agricultural and domestic requirements for water. Tourists use more water than local people do, sometimes up to five times as much, adding to pressure on potable water supplies. Desalination has its attractions as a means of meeting the water needs of low islands in the Pacific and the Indian Oceans; but it involves high capital costs, high energy requirements, and complex technology. Maldives is using excess heat capacity generated by power plants in desalination plants. However, we feel that more attention should be given to building less expensive water-storage tanks, increasing the number of man-made catchment areas, developing additional sources of groundwater, and encouraging the use of simple technologies operated by solar energy. Water recycling can be considered in certain instances. In the Caribbean countries, pricing policies can be considered to prevent wastage. The maintenance of the quantity and quality of water supplies depends as much on watershed protection and management as on the maintenance of water-supply collection and distribution systems.

Hazardous waste

5.40 The international movement of hazardous wastes for disposal is a matter of particular concern to small states, whose ecosystems can become irreversibly and extensively damaged by careless dumping. As the industrial countries that generate the waste apply stricter environmental controls, the costs of disposing of toxic substances are spiralling, and sites in developing countries become tempting outlets. There are instances of large cash offers being made to Caribbean and South Pacific islands to receive toxic and hazardous waste, including municipal sludge. There are also cases of illegal dumping of such wastes. Waste disposal at sea is especially dangerous for islands, which are necessarily more vulnerable than other states to marine pollution.

5.41 We endorse the general principle that as little hazardous waste as possible should be moved from country to country, in order to minimize the risk of accident and the possibility of illegal dumping. Waste should be disposed of—or rendered harmless—as close as possible to its place of generation. Detoxification should be carried out in a manner causing least harm to the local environment. Adherence of more countries to more stringent enforcement of the Basel Convention, which regulates the international movement of hazardous and toxic wastes, is needed. The OAU has banned this trade among member countries.

5.42 A major problem is the handling of nationally generated waste products in small quantities. A way of overcoming this problem is providing small states with access to cleaner and more appropriate technologies to cope with a complex problem. In the long term, industrial processes and products

should evolve technically and economically towards the minimum generation of harmful by-products and residues.

5.43 For the present, there will have to be some exceptions to these statements of principle—e.g. technologically advanced countries which have the specialised facilities for safely and profitably disposing of hazardous waste, and small countries where current methods of disposal are difficult to avoid because it is uneconomic to install specialised treatment units for a small throughput of material.

Ecosystems and biodiversity

5.44 Many small islands provide sanctuaries for life forms which, except for the isolation provided by their special environments, might have perished through destruction by pests, diseases and human agency. Rare and fragile ecosystems containing valuable genetic resources are in particular evidence on the coasts of islands. They are subject to a variety of hazards. Development leads to the unplanned use of coastal zones and the growth of offshore activities, with an adverse impact on the environment. Damage to one ecosystem could have an adverse impact on others; the removal of forest cover could lead to the destructive siltation of ecosystems in coastal and estuarine areas. Protecting such ecosystems will require resources and forfeit immediate revenue, and hence is likely to be given low priority in countries in the throes of development. The preservation of sanctuaries in the form of protected areas (see para 5.35) for the unexplored genetic resources of humankind will require special international assistance.

Enhancing Education, Training and Information

5.45 Because traditional societies operated within the constraints posed by nature and because the social system evolved in association with traditional resource use, conservation practices were developed in many small states. These practices still exist to some extent. Their adoption can play an important role in the sustainable use of island resources. Custom can provide the basis for environmental education and development of an environmental ethic, and modern resource uses can profitably draw principles or guidelines from traditional practices.

5.46 The pressures for modernisation have led to the neglect of traditional methods of environmental protection and the decline of people's environmental consciousness. In most small states the environment has no place in modern educational curricula. The creation of environmental consciousness among decision-makers and the general public is vital for the effective development of environmental conservation policies. In this context, equal recognition should be given to the gender roles of women and men.

We recommend that environmental education and training programmes should be developed, relevant to the circumstances of small states.

5.47 *International agencies should also support these activities by:*

- *holding regular in-house programmes on environmental training;*

- *designing programmes to be incorporated into the educational curricula of island and other small states; and*

- *producing and widely disseminating audio-visual as well as other material for educational purposes.*

5.48 To determine the potential effects of environmental degradation on development and to design and implement appropriate mitigation measures, small states must have access to relevant information. At present, information available to them is marginal, most data networks are sectoral and much material is not accessible to decision-makers, especially in small countries. While continuing efforts are needed to develop data networks on environmental issues, attention should be given to assisting small states to contribute to the process, especially in relation to accessing such information. We note that the Commonwealth Secretariat has been endeavouring to assist in this connection through its publications, especially its quarterly 'International Development Policies' which includes a section on the Environment. Small states could be assisted further through centres to provide data storage, dissemination and network services, set up at regional institutions.

Strengthening Development Assistance

5.49 Small states do not have the resources necessary for their environmental protection. The frequent occurrence of natural disasters in these states urgently requires a regional approach to disaster preparedness, including risk assessment, mitigation measures, disaster insurance, relief and rehabilitation. There are some mechanisms in place in both the Caribbean and the Pacific but assistance is required on a much larger scale in order to make them effective. Existing communications networks and programmes to promote public awareness need to be strengthened, especially in areas such as training, monitoring and prediction. *In the light of the scientific consensus on the likelihood of global warming and the threat of sea-level rise, and its effects on island small states, regional organisations in the Pacific and Indian Oceans and in the Caribbean should monitor the situation and develop a programme of action for cooperation and exchange of information on strategies and policies on the concerned issues.*

5.50 In terms of international negotiations on the environment, small states have so far been on the periphery. There is a major need for them to articu-

late and represent their interests better in international forums, and to have more opportunities for sharing experiences in evolving their environmental policies. On the one hand, the present organisation of UNCED does not give adequate scope for the interests of these states to be taken forward in the preparatory process. On the other hand, they can provide an invaluable role in the conservation of the global environment. But small states are being marginalised in both the international and the regional forums which are part of the UNCED preparatory process. The same applies to the Intergovernmental Negotiating Committee (INC) set up under UN auspices to negotiate an international convention on climate change (see Chapter 4). This fact should be recognised by the international community.

5.51 An alliance of small island states (AOSIS) has been formed to articulate their position on environment at recent meetings of the UNCED Preparatory Committee and of the INC, as well as in other forums. To make an impact, however, AOSIS's coordination and technical capacity will have to be strengthened. *The Commonwealth Secretariat could be helpful in this connection. We recommend that it takes early action to organise meetings and provide technical and financial support to assist small states in their preparations for both UNCED and INC sessions. This could be done through Commonwealth consultations organised just before meetings of the UNCED Preparatory Committee and of the INC. We welcome the fact that the recent study on the Commonwealth Fund for Technical Co-operation (CFTC) and Environmental Issues outlines some specific services which CFTC could offer. We recommend that these and other technical assistance services for small states in the environmental field should be expanded.*

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