

## **The Environment: Response and Recommendations**

8.1 Most small states are island developing states and middle income developing states. Both these features bear significantly on how they cope with the environment. The international community has recognised that SIDS are particularly at risk. A number of programmes and initiatives have been launched in the last ten years designed to reduce their vulnerability and improve their chances for sustainable development. These have met with mixed success and while there have been significant improvements many problems remain. Much of this has to do with resources, or rather the lack of them. Small developing states as small states and as developing states frequently lack economic capital, human capacity and technical skills, yet this double burden is too often unrecognised by the international donor community who are prepared to extend additional finance only to the least developed amongst them. Small states therefore necessarily and increasingly will have to look to their own resources to manage the environment.

8.2 The focus of this chapter is on how small states can cope better with a wide range of environmental challenges through appropriate policy responses, including more effective integration of economic and environmental policies. It also considers how suitable policies at international and regional levels can assist the sustainable development of small states.

### **The Special Problems of SIDS**

8.3 The special circumstances and needs of SIDS are recognised in the 'Programme of Action' adopted by the UN Conference on the Sustainable Development of Small Island Developing States in 1994. The Programme addresses the sustainable development of SIDS in a comprehensive manner and proposes numerous measures which should be taken at the national, regional and international levels. Specific sections deal with climate change and sea-level rise; natural and environmental disasters; management of waste; coastal and marine resources, fresh water; land resources; energy; tourism; biodiversity; national institutions and administrative capacity; regional institutions and technical co-operation; transport and communications; science and technology; human resource development; trade; and financial resources.

8.4 The Conference agreed that the UN Commission on Sustainable Development (CSD) would monitor the programme as part of its work. At their June 1997 meeting, Commonwealth Environment Ministers expressed disappointment that little progress had been made in the implementation of the Barbados Programme. A comprehensive review of the Programme is to be undertaken by a two-day special session of the UN General Assembly in 1999 (immediately preceding its annual session).

8.5 Several small states could be the front-line victims of the consequences of global warming which has been caused by the policies and actions of larger countries. Commonwealth Environment Ministers have agreed that this critical issue requires urgent global response. The scientific projections have underscored the importance of implementing existing commitments of industrialised countries under the Climate Convention and reducing emissions beyond the year 2000. Different approaches have been proposed for this purpose. Some emphasise the need to adopt legally binding targets for uniform reduction of emissions of greenhouse gases by industrial countries, while others stress the need for an agreement to be fair, achievable and realistic. It is vital to promote consensus on this issue in order to reach agreement on effective measures to reduce global warming and sea-level rise at the Kyoto Conference of Parties to the Climate Convention in December 1997.

8.6 Three areas which demonstrate the difficulties involved are sea-level rise, natural disasters and tourism. As noted in the previous chapter, climate change and associated sea-level rise is a general problem for many small states and an acute problem for some SIDS. The need for action is both urgent and expensive. The same goes for natural disasters which are the single largest immediate external risk to many SIDS. Much can and has been done to mitigate their effects but the costs remain considerable and more can be done to share the burden internationally. Tourism was also identified in the previous chapter in the section which discussed internal risks. It offers significant development benefits to small states if it is managed sustainably, but efforts in this direction have only just begun and in some SIDS there is a considerable legacy of problems to overcome.

### **Reacting to sea-level rise**

8.7 While it is imperative to slow down global warming by reducing greenhouse gas emissions, it would be prudent for the most vulnerable small states to consider policy options for coping with sea-level rise. These tend to be classified as 'retreat', 'accommodate' and 'protect'. Retreat basically means relocating activity away from areas at risk and

allowing inundation to occur. While this may not seem logical at first, it can be the most sensible policy in circumstances where the costs of other forms of action greatly outweigh the value of the resources at risk. 'Accommodate' means adapting to sea-level rise, for example, by raising buildings above the ground. 'Protect' will primarily mean building up sea defences. Actual policy is likely to be a mix of all three options: some land will not be worth saving, for some people and some activities relocation will be most preferred, but clearly there will be contexts in which only prevention will make sense. This would be the case for those countries where most (or even all) of the land area is at risk. IPCC (1992) estimates such protection costs (last column of Table 7.1) and these are seen to vary widely. The Marshall Islands, for example, would have to spend 7% or more of its annual income on protection measures to bring risks down from 20,000 people being affected to 2,000. St Kitts and Nevis would also face a major bill of nearly 3% of GNP (as a benchmark, industrialised countries tend to spend 1.5-2% of their GNP on environmental protection generally). Other small states, however, could protect most of the population at risk for expenditures that are comparable to those for larger states.

8.8 IPCC (1992) reports further vulnerability indicators for more aggregated regions. This is convenient for current purposes since the classifications include island states. Table 8.1 shows developing country regions with above world average risk factors in terms of percentage of populations at risk.

**Table 8.1 World Region Risk Factors for Sea-Level Rise**

| Region                       | People at Risk<br>as % Population |                    | Cost as %<br>of GNP p.a. |
|------------------------------|-----------------------------------|--------------------|--------------------------|
|                              | without<br>protection             | with<br>protection |                          |
| Indian Ocean small islands   | 21.5                              | 2.3                | 0.74                     |
| Atlantic Ocean small islands | 10.8                              | 1.2                | 0.09                     |
| Caribbean islands            | 9.5                               | 1.1                | 0.19                     |
| Pacific Ocean small islands  | 6.8                               | 0.8                | 0.73                     |
| Middle East                  | 5.5                               | 0.8                | 0.03                     |
| South Asia                   | 4.2                               | 0.5                | 0.10                     |

8.9 The most notable feature of these estimates is the high proportion of people at risk in Indian Ocean small island states – 22% of the population. This can be brought down to just over 2% of the population at a fairly considerable GNP cost. In a similar fashion, South Pacific small islands can secure a tenfold reduction in the population at risk for a fairly sizeable expenditure.

8.10 How far the expenditure figures shown here are proper indicators depends on the extent to which the retreat and accommodation options have been built into the estimates, i.e. protection will not necessarily be the best option. But, clearly, some island states have no option. Nor, of course, would such states necessarily bear the costs of protection wholly themselves as some form of international aid can be envisaged.

### **Natural and environmental disasters**

8.11 A number of initiatives and programmes have been developed in both the Caribbean and the South Pacific which have significantly improved disaster mitigation, preparedness and emergency relief management. The Caribbean Disaster Emergency Response Agency co-ordinates disaster relief in the region. At national level many states are undertaking disaster reduction activities supported by the Caribbean Disaster Mitigation Project, which is funded externally. A similar programme in the South Pacific is the South Pacific Disaster Reduction Programme which provides a framework for regional co-operation and exchange as well as support for national disaster management. Elsewhere there is little progress to report and much remains to be done.

8.12 Everywhere, national efforts remain critically underfunded and only a few countries have established national emergency funds. This leaves SIDS unnecessarily exposed and dependent on regional and international action. Recent experience in the Caribbean indicates that the lack of emergency funds and effective procedures for emergency disbursement slows down the delivery of assistance from national and international agencies. Yet few countries there or in the South Pacific regard such funds as priority. They need to be established where local circumstances permit along with appropriate national insurance programmes with governmental and private sector participation. The mobilisation of international funds as part of this effort is critical but likely to be difficult. Other national measures which have been identified as important for reducing the impact of disasters are institutional development, including early warning systems and human resource development for disaster management; the integration of natural and environmental disaster policies into national planning; and the improvement of systems and arrangements for information and communication.

8.13 Disaster preparedness and mitigation at a regional level is regarded as particularly effective. It is this level which can best assess risk and vulnerability, identify common interests and requirements, and develop

co-operative mechanisms to assist in disaster relief. Examples include early warning systems, the sharing of expertise and the development of standardised legislation such as the Caribbean Uniform Building Code which has improved hurricane resistance in the built environment. It is therefore important that existing regional disaster reduction mechanisms in the Caribbean and the South Pacific be strengthened and consolidated and that regional co-operation be encouraged elsewhere, for example in the Indian Ocean.

8.14 The further development of national and regional programmes demands significant levels of international support. The Yokohama Strategy and Plan of Action adopted at the World Conference on Natural Disaster Reduction in 1994 recognised the need to pay special attention to the vulnerabilities and needs of SIDS. However, many SIDS argue that little has been done to mobilise the additional financial resources required for a comprehensive programme of disaster reduction. They also point to the urgent need for international action to provide access to technology, training and information over a range of activities. It is difficult to escape the conclusion that more should and can be done by the international community to support their efforts in disaster reduction programmes.

8.15 Finally, the Commission on Sustainable Development (CSD) in a recent report note that 'the potential danger posed by the frequent passage of commercial vessels, and on occasion vessels carrying toxic and hazardous wastes through the high seas surrounding a number of SIDS continues unattenuated'. The dangers of marine pollution and of the transport of hazardous waste have been identified earlier. The signing of the Waigani Convention covering the South Pacific and the statement issued by the Heads of Government of CARICOM in 1995 on this subject indicates the importance which many SIDS now attach to this matter. Questions concerning the transboundary movements of hazardous and nuclear waste are under active consideration in other fora such as the International Atomic Energy Agency. Since the current state of international law in this area is unclear and there are divergent views and practices among different countries, the international community needs to develop more effective instruments and arrangements which address the concerns of small states.

### **Sustainable tourism development**

8.16 Tourism has had a significant economic impact on most SIDS. It has accelerated the growth of national income, boosted foreign exchange earnings, provided labour-intensive employment opportunities, and contributed to government revenues. Tourism and tourist-related

activities have become the mainstay of the economy in many Caribbean and Indian Ocean SIDS while elsewhere it is a major or growing sector of activity as in the Mediterranean and South Pacific SIDS. The prospects for future growth are good with forecasts suggesting that between 1995 and 2005 travel and tourism will grow by an average annual rate of 5.5% in real terms, outpacing the growth of world economic output.

8.17 Many SIDS are well placed to capture a share of this market. They will, however, have to integrate tourism into their development programmes more carefully than they have done in the past. This is not simply an economic question but also a social and environmental one. The rapid development of mass tourism can put significant pressures on SIDS. The number of visitors at peak periods can exceed the local population in the smaller SIDS and in larger ones there can often be localised carrying capacity problems as tourists crowd beaches and roads and command local amenities. There can also be fall-out from crime and drugs.

8.18 The principal environmental difficulties have been identified as pressures on land resources and wildlife; limited infrastructural facilities to deal with solid and liquid waste generated on land and at sea; coastal area degradation affecting beaches, mangrove forests and coral reefs; and intensified use of scarce freshwater resources. These, along with the generalised problem of the effects of climate change and sea-level rise, pose major problems which, unless sustainably managed, could undermine and destroy both local communities and the tourist economy.

8.19 The interrelationship of the economic, social and environmental impacts of tourism mean that any plan for sustainable tourist development needs to be comprehensive. There have to be policies and measures to enhance the economic benefits from tourism as well as to ensure that tourism is socially and culturally acceptable. The greater involvement of nationals in the tourist sector can do much to ensure both outcomes. In relation to the environment careful vetting of tourist development proposals is needed along with the use of economic instruments to recover costs such as user fees for national parks; charges on the tourist industry for water and waste management; and the review of taxes and elimination of subsidies which have environmental costs. The fact that in many SIDS the private sector is alert to and aware of the need for sustainable development as sound business practice is a bonus and support for such measures. There is also a case for further enactment and improved enforcement of environmental legislation.

8.20 Benefits can also be gained by collaboration among SIDS at the regional level and international levels. In both the Caribbean and the Pacific regional tourism bodies have been established to strengthen tourist development, planning and promotion. The latter is particularly important given the costs of overseas marketing and can lead to significant economies of scale being realised. A regional conference on sustainable tourism has been held in the Caribbean and is planned for the South Pacific. Another initiative taken in 1995 was the World Conference on Sustainable Tourism which adopted a 'Charter for Sustainable Tourism' and a programme of related activity to follow up on its work. The UN system has also sponsored a number of initiatives in support of such activity in recent years.

### **Financial resources**

8.21 The Barbados Programme of Action recognises that the increased significance attached to the sustainable development of SIDS will require the provision of 'adequate, predictable, new and additional financial resources' in accordance with Chapter 33 of Agenda 21. It also calls for more efficient use of official development assistance and other sources of external finance; greater co-ordination of the efforts of donors and recipient; exploration of the use of innovative financing mechanisms; the provision of concessional finance and technical assistance at levels necessary to the support sustainable development of SIDS; and targeting such assistance where it is most needed. The Programme also urges SIDS to ensure their macroeconomic policies are supportive of national sustainable development goals and priorities, and to mobilise additional supportive domestic resources by promoting private sector investment and exploring the increased use of economic instruments and innovative financing mechanisms.

8.22 The macroeconomic dimension is examined in the next section. In respect of external finance there is considerable uncertainty, and hence concern, as to whether sufficient resources will be forthcoming. The record to date is not encouraging. Overall, financing for implementation of the Programme of Action through bilateral or multilateral resource flows has declined over the period 1991–94. While bilateral flows have predominated they have been concentrated in a relatively few countries (for example Haiti and Palau) reflecting US political priorities and established patterns of commitment (assistance from Australia and New Zealand has gone overwhelmingly to South Pacific SIDS and Canadian assistance to Caribbean SIDS). In terms of the 14 priority areas identified in the Programme, external resources have been channelled predominantly to human resource development, national institutions and administrative capacity, transport and communications, and land resources. Natural and environmental disasters

and tourism development have received modest sums at best and climate change and sea-level rise none at all.

## **Macroeconomics and the Environment**

8.23 The Langkawi Declaration on the Environment adopted by Commonwealth Heads of Government in 1989, drew attention to the need to integrate economic and environmental policies in order to make development environmentally sustainable. This was also emphasised in Chapter 8 of Agenda 21. Essentially, economic instruments are designed to influence the costs and benefits of alternative action open to economic agents. In contradistinction to command and control approaches, economic instruments rely primarily on incentives and market stimuli to produce desired outcomes. When properly deployed their effect is to influence behaviour in such a way that alternatives are chosen that lead to a more environmentally desirable situation than would obtain in the absence of such instruments.

8.24 In this section the role of such instruments is examined. The focus is on new and innovative sources of finance to raise revenues. These include inward looking measures that price the environment and outward looking measures that capitalise on the environmental assets that small states possess.

## **Macropolicy reform**

8.25 The focus on sustainable development is appropriate for all countries, but especially so for small states. Many small states have significant 'environmental sectors', in the sense that they have non-renewable natural resources, such as minerals; renewable natural resources such as coral reefs, fisheries and wildlife; natural resources which are mixtures of renewable and non-renewable elements such as beaches and wetlands; or a desirable climate. All of these, climate included, can be lost through the act of capital depreciation – of running down such assets without taking care to renew them. Depreciating environmental assets may occur because of domestic policy, because policies are imposed on a small state externally, or because of some global change which threatens the small state environment, as with global climate change.

8.26 Underlying this emphasis on the natural environment is the idea that economy and environment interact. The idea that economic activity has impacts on the environment is of course not new: it underlies, for example, the early discussions on 'Limits to Growth'. What is less well appreciated, however, is the extent to which environmental damage impairs economic performance. For example, estimates of the economic cost of air pollution damage in terms of damage to human health in large cities like Cairo, Bangkok and Jakarta ranges from US\$



30 to US\$ 400 per capita. The fact that such damage only partially appears in the conventional GNP accounts underlines the need for better indicators of human welfare change. But it also suggests that the dependence of economy on environment would be better revealed and understood if such indicators were adopted.

8.27 Once the interactions between the economy and the environment are understood, our appreciation of macroeconomic policy also changes. It is customary to think of macroeconomic policies as including management of the major macro-variables influencing the economy – exchange rates, interest rates, and government budgets. But macropolicy also includes the liberalisation of domestic markets and international trade, privatisation and pricing reform. Substantial experience has now been built up on the links between changes in these policy variables and the environment and while considerable uncertainty remains because interactions are often complex it is nonetheless true that certain general results can be formulated.

8.28 First, it is generally, though not universally true that price reforms will both improve the chances of economic progress and help the environment at the same time. Second, reforming one policy variable without attending to the distortions in others tends to be counterproductive. Reform has to be ‘across the board’. Third, stability may matter as much as the general trend of change. Macroeconomic stability – the avoidance of severe fluctuations in policy variables – leads to more stable expectations which in turn encourage sustainable resource use rather than the rapid ‘mining’ of resources because the future is uncertain. Consistency of policy as much as the policy itself matters. Fourth, macropolicy changes can benefit long term economic growth and employment. Contrary to the ‘limits to growth’ literature, these outcomes can benefit the environment as wealthier populations demand higher environmental quality, and, probably more important, as reductions in unemployment reduce the pressures on ‘free’ resources such as fuelwood.

### **Demonstrating and Capturing Environmental Value**

8.29 Pricing is central to macropolicy reform. Pricing natural resources properly is a form of ‘value capture’: economic value resides in environmental assets but that value is all too often not reflected in the market place. By creating and extending markets in these assets, the latent economic value is released and captured. The two stages of environmental pricing reform are therefore known as ‘demonstration’ and ‘capture’: the former is the exercise of showing that economic value exists, the latter is the process of ensuring that this value accrues to the relevant parts of society.

## Demonstrating economic value: resource accounting

8.30 Placing economic values on environmental assets is controversial but essential for sustainable development. For as long as environmental assets do not have economic values ascribed to them, their true importance in economic decision-making will be neglected. The process of demonstrating economic value involves specialised techniques of economic valuation, and these techniques can be applied at the micro-scale to assist in making decisions about, for example, whether or not to permit a coastal development; or at the macro-scale to reflect better the economic value of environmental assets in the national accounts (GNP). The former activity of resource accounting is encompassed in cost-benefit analysis. The latter involves national resource accounting to include environmental depreciation of assets to arrive at 'true' or 'green' net national product. Reforming the national accounts in this way is urged in Agenda 21.

**Table 8.2 'Green' National Accounts for Papua New Guinea**

(10 million kina)

|                                     | 1986  | 1987  | 1988  | 1989  | 1990  |
|-------------------------------------|-------|-------|-------|-------|-------|
| Net domestic product (NDP)          | 2,314 | 2,569 | 2,862 | 2,698 | 2,760 |
| less                                |       |       |       |       |       |
| Depletion of resources +            | 145   | 228   | 124   | 43    | 199   |
| Quality degradation                 | 36    | 36    | 36    | 36    | 36    |
| Total depreciation                  | 181   | 264   | 160   | 79    | 235   |
| equals                              |       |       |       |       |       |
| 'green' NDP                         | 2,133 | 2,305 | 2,702 | 2,619 | 2,525 |
| Environmental depreciation as % NDP | 7.8   | 10.2  | 5.6   | 2.9   | 8.5   |

*For each year, the adjustments shown are for depletion, i.e. the running down of stocks, and 'quality degradation by residuals', i.e. pollution. For resource depletion the approaches varied but included multiplying physical stocks changes by the 'rental' value of the resource (essentially, price minus cost of extraction). For pollution damage the approach used was to value damage at the cost of avoidance or restoration. This is not theoretically correct but reflects the difficulties of obtaining estimates of the monetary valuation of damage actually done by pollution.*

Source: adapted from Bartelmus et al., 1993.

8.31 A number of studies have taken place on 'green' national accounting. Table 8.2 reports the only existing study for a 'small' state as defined in this report, Papua New Guinea. It shows that environmental depreciation ranges from 3% to 10% of Papua New Guinea's net domestic product. It is not obvious if this makes Papua New Guinea unsustainable or not. Papua New Guinea, after all, has substantial natural resources. In countries which are not so well endowed such levels of depreciation could be unsustainable. To have general effect and to be really meaningful, 'green' national accounting would need to be adopted by all countries.

### **Capturing economic value: pricing the environment**

8.32 A central feature of the studies on macropolicy and the environment is the emphasis they place on price reform. Reform can be thought of as a two stage process: first, cost recovery, and, second, charging for environmental externalities. Cost recovery means raising prices so that they at least cover the (marginal) costs of production. externality charging means raising prices further to reflect the use of environmental resources not included in market prices.

8.33 Subsidies have a number of distorting effects. First, they send the 'wrong' signals to users of a resource. By keeping prices low, resource use is encouraged. Examples of over-use because of low cost recovery are widespread and include pesticides, resulting in excessive application rates and risks to those handling the chemicals; irrigation water, the excessive use of which can give rise to waterlogging and salinisation; fertilisers, resulting in excess runoff into watercourses and increased nutrient content of water (eutrophication); fossil fuel energy, resulting in unnecessary air pollution and waste of resources. Second, producers are encouraged to oversupply the market in order to meet the excess demand arising from low prices. At the same time, they have no incentive to be efficient in the production of, say, energy since the more they produce the more subsidy is received. Indeed, output may be exaggerated in order to collect larger subsidies. Third, the subsidy has to be paid for through some other form of financing. The result is either an excess tax burden on other industries and households, or, if tax rates are thought to be 'fair', the loss of some other benefit that could be obtained by spending elsewhere the money absorbed by the subsidy.

8.34 Subsidy removal in developing countries has progressed, although evidence on subsidies in small states seems to be missing. None of the case studies included in the World Bank programme on economy-wide policies and the environment is a small state and the same is true for the case studies produced by the Asian Development

Bank. It would be surprising, however, if the lessons were any different for small states. One obvious problem in reducing subsidies is the effects on the poor. One study evaluating these impacts in six large states (Colombia, Ghana, Indonesia, Malaysia, Turkey and Zimbabwe) finds that energy subsidies tend to benefit the non-poor urban households. They found only modest effects on industry and significant benefits on public budgets, suggesting that any impacts on poorer households might be offset by the savings in public expenditure.

8.35 The second stage of price reform is the pricing of goods and resources to reflect their 'full cost', including the cost of environmental services. This is the essence of the 'polluter pays principle' whereby the costs of achieving any given environmental standard are, in the first instance, met by the producer of the good or extractor of the raw material. Some of this increased cost will be passed on to consumers and it is important that it should be since consumers also need to receive the right 'signal' that a good has a high or low pollution content. The ways in which these full costs are charged to products is through environmental taxes and tradeable permits. The full costs of using a natural resource can be recovered through resource charges.

8.36 Environmental taxes and resource charges can be considered together. The principle is the same: a price is charged for the use of a scarce environmental asset, whether it is a clean atmosphere, river quality, or a wildlife reserve. Taxes and charges may take various forms: the product may be taxed directly – a product charge; or it may be possible to tax the polluting emissions directly, an emissions tax; or the use of the resource is subject to a resource charge. In turn, emissions taxes may be directly related to emissions or to the ambient quality of the environment (i.e. damage done as opposed to emissions). Contrary to popular opinion, environmental taxes, sometimes known as 'ecotaxes', are widespread. In several Scandinavian countries between 6% and 11% of total tax revenues derive from such taxes.

8.37 Examples of tax/charges in developing countries include Congo's tax on the clearing of public forest land, Malaysia's effluent charge system, and Kenya's policy of charging entry prices to wildlife game parks. Taking the last example, the power of proper pricing is noteworthy. First, Kenya deals with a great many tourists each year, but questions have been raised about the extent to which wildlife tourism and some hunting constitutes the best use of scarce land resources. It has been estimated that Kenya forgoes some US\$ 200 million per year in agricultural output because of wildlife conservation. When due allowance is made for the role played by beach resorts in tourist revenues, repatriation of profits to other countries, and the costs of

supplying the tourist trade, Kenya may be making only US\$ 40 million net profit from wildlife. But the apparent relative unprofitability of wildlife reflects a failure on the part of Kenya to capture the full economic value of wildlife. Other studies show that tourists are willing to pay around US\$ 400 million per annum to ensure wildlife viewing. One simple capture mechanism is to raise the entry prices to game parks. This would be a self-defeating measure if demand was very responsive to price – demand would fall and revenues would fall. But ‘willingness-to-pay’ studies show that demand is fairly ‘inelastic’, i.e. non-responsive to price changes, so that by raising prices revenues actually increase. Moreover, demand falls slightly and this is welcome in terms of the carrying capacity of the reserves: many have experienced an excess of tourists with the result that animal behaviour has been changed. The idea of ‘optimal’ charging for a resource is simple and it allows for ecological considerations to be taken into account as well. The final bonus for the charging policy is that the charging agency, in this case the Kenya Wildlife Service, collects the revenues, reducing its subsidy from the state and giving it potential financial independence.

8.38 A tradeable permit is a permit to emit pollution or to extract a given quantity of a resource (fish, say), but with the important addition that the permit can be bought and sold on the open market. The attraction of this is that those who find pollution control expensive will tend to buy permits and those who find it easier to abate will be willing to sell permits. In this way, pollution control is focused on those who have low costs of abatement, minimising the overall costs of the environmental policy. Moreover, the number of permits issued can be varied. If tighter controls are required, then government can purchase the permits in the open market, lowering the amount of pollution permitted. The effect is then to raise the price of the permits in the open market, stimulating further control by those who now find it cheaper to abate the pollution. As a general rule, abatement will take place whenever the costs of control are less than the price of the permit, and permits will be purchased when the permit price is less than the cost of control. The same principle can be used to ration the use of a resource, and tradeable quotas are quite widely used to control overfishing, forest use, and over-use of water. Congo and Cote d’Ivoire, for example, auction rights to cut forests; Chile and Mexico have systems of tradeable water rights which are issued subject to no infringement of existing rights and subject to ecological low flow constraints. Also in Chile access rights to congested roads are auctioned among taxi and bus operators in an effort to control congestion; and Poland has a pilot emissions trading scheme, as has Almaty in Kazakhstan.

8.39 Clearly, these uses of market based instruments in the developing world are limited, but the fact that they exist at all shows that they have potential and that in any pursuit of sustainable development, they must at least be considered and evaluated. But there is yet another argument that justifies close inspection of market-based instrument systems. Charges, taxes and auctioned permits and quotas all raise revenues. Revenues might be channelled back to the authority which acts as owner of the resource, as with the Kenya Wildlife Service example, or they may accrue to local, regional or central government. The ways in which such revenues are used is important. They might, for example, be used to finance other environmental protection. In short, the potential for environmental taxes and charges is large, and that potential becomes especially important in the context of countries where other measures of taxation may be difficult to implement.

### **Capturing global values**

8.40 Developing countries are often in possession of resources which are highly valued by other countries, or which have a general 'global value'. But markets to capture this global value for the benefit of the countries in question are often absent. There are several ways in which global missing markets can be corrected through creating global environmental markets. It is possible to distinguish between private and public ('official') ventures, and between those that are regulation-induced and those that are spontaneous market initiatives. Public regulation-induced activity arises because of international agreements, such as the Biodiversity and Climate Change Conventions.

8.41 The existence, or threatened existence, of regulations acts as a stimulus to trade. A number of US states and several European countries have policies which limit the amount of carbon dioxide that may be released. These regulations are either self-imposed or reflect obligations under the Framework Convention on Climate Change. Since technologies to control carbon dioxide emissions are very expensive, the kinds of actions needed tend to take the form of energy conservation and fuel switching to low carbon fuels. For some electric utilities, however, even these options may not be available or may be available in only limited form. Such utilities then have an incentive to meet their carbon reduction targets by 'joint implementation' which is enabled, on a pilot basis until the year 2000, under the Climate Convention. The essence of the concept is that country A secures a benefit by reducing emissions or undertaking conservation in country B. A's benefit is the 'credit' under the global environmental agreement, or it may be that A simply seeks a good global 'green image'. Norway has agreed to create additional financing (through the revenues from

its own carbon tax) for carbon-reducing projects in Mexico (energy efficient lighting); the US government has a programme of such deals under its Initiative on Joint Implementation which has benefited Central American countries; and in the Netherlands, the state electricity generating board established a non-profit making enterprise in 1990, Forests Absorbing Carbon Dioxide Emissions (FACE), which aims to sequester an amount of carbon dioxide equivalent to that emitted by one 600 MW station (approximately 150,000 hectares of forest, mainly in tropical countries).

8.42 Financial transfers may take place without any regulatory 'push'. The consumer demand for green products has already resulted in companies deciding to invest in conservation either for direct profit or because of a mix of profit and conservation motives. Merck's royalty deal with Costa Rica for pharmaceutical plants is a case in point. The deal between Merck & Co, one of the world's largest pharmaceutical companies, and INBio (the National Biodiversity Institute of Costa Rica) is well documented. Under the agreement, INBio collects and processes plant, insect and soil samples in Costa Rica and supplies them to Merck for assessment. In return, Merck pays Costa Rica US\$ one million plus a share of any royalties should any successful drug be developed from the supplied material. The royalty agreement is reputed to be of the order of 1% to 3% and to be shared between INBio and the Costa Rican government. Patent rights to any successful drug would remain with Merck. Biodiversity is protected in two ways – by conferring commercial value on biodiversity, and through the earmarking of some of the payments for the Ministry of Natural Resources.

8.43 A great variety of trades involving both the public and private sectors is possible. For example, consider the general area of resource franchise agreements (RFAs). The general principle of RFAs is that specific land uses in defined zones are restricted ('attenuated') in return for the payment of a premium. The potential buyers could range from local conservation groups through to international conservation societies, corporations, governments and so on, with motives ranging from profiting from sustainable use through to scientific research and good citizenship images.

8.44 Debt-for-Nature Swaps belong to the category of resource franchise agreements. Under such swaps, a body interested in conservation in a given country buys some of the external commercial debt of that country on the open market. Such debt is often 'discounted', i.e. has a market price that is less than 100% of its face value, reflecting the market's assessment of the chances of the debt being repaid. The relevant agency, which could be a conservation body (for example the World

Wide Fund for Nature) then swaps the debt for internal debt, i.e. debt denominated in the domestic currency rather than the foreign currency of the original debt. Effectively, a foreign debt becomes a trust fund or bank account in the indebted country. In return the country agrees to conserve a given environmental asset, often a tropical forest area, but it could be any environmental asset. The indebted country gains from reduced external debt, and may also secure foreign expertise or even clean technology. The conservation agency gains the conservation of a globally valued environmental asset. Domestically, non-government agencies tend to be involved in the management of the conserved asset, raising their status. To date, dozens of such swaps exist and some countries, notably Costa Rica, have retired significant portions of their external debt. Debt reduction is not the main aim of such swaps, but is rather the instrument for securing conservation. Nor would anyone suggest that such swaps should be the main way of retiring debt, but they exemplify the growing number of 'bargains' that generally make all parties better off.

### **Global environment facility**

8.45 The Global Environment Facility (GEF) was created to deal with selected global environmental problems: reduced greenhouse gas emissions, biodiversity conservation, and problems of international shared water resources. It has also taken over the management of the Multilateral Fund that finances the implementation of the Montreal Protocol for the control of ozone depleting substances. Since 1992 it has also been the interim financing mechanism for the Climate Change and Biodiversity Conventions. It is jointly managed by existing UN agencies – United Nations Environmental Programme, the World Bank, and United Nations Development Programme. Its funding (on grant and concessional basis) is intended to be additional to existing sources of aid, and is designed to meet the incremental costs of projects in developing countries which provide global environmental benefits. Following an initial phase, the GEF was restructured and replenished (with US\$ 2 billion) in 1994. It is due for further replenishment by the end of 1997.

8.46 An example of a programme the GEF has supported with initial seed-funding of US\$ 3 million is the Iwokrama International Rainforest Programme. The Programme arose out of a generous and unprecedented offer by Guyana's government, at the CHOGM in 1989, to set aside almost a million acres of its pristine rain forest for both conservation and sustainable development. A medium-term plan has been drawn up with Commonwealth assistance and additional finance is now being sought to place the Programme on a sound financial footing.



### **The Iwokrama Programme**

*The tropical rainforest is a form of ecological capital which provides multiple benefits – economic, environmental and socio-cultural. Can small countries endowed with such forests capture these benefits to meet present needs while conserving the capital for posterity? The Iwokrama Programme, launched with the Commonwealth's blessing and support in 1990, is a practical response to this challenge. Half of the Iwokrama Forest is a Wilderness Preserve where biodiversity is being conserved for scientific research; the remainder will be exploited, in partnership with the private sector, to provide economic benefits on an environmentally sustainable basis. With an agreement signed by the President of Guyana and the Commonwealth Secretary-General at the 1995 CHOGM in New Zealand, legislation was enacted unanimously by Guyana's Parliament in March 1996, guaranteeing the autonomy of the forest area and the Iwokrama International Centre which is responsible for managing it. The Centre has three core programmes: management of the tropical rainforest; conservation and use of biodiversity; and sustainable human development, working in partnership with local Amerindian communities. These are supported by two cross-cutting programmes: research on forests and biodiversity; and information and communication. A donors meeting, co-chaired by the World Bank and the Commonwealth Secretariat and hosted by the European Commission, will be held in October 1997 in order to secure commitments to fund the Centre's basic infrastructure and institutional development. A Consortium is also being formed to enable Commonwealth and non-Commonwealth research institutions with interests in sustainable forest management and biodiversity, to contribute to, as well as benefit from, the Centre's research and training activities.*

8.47 The ability of small states to take advantage of arrangements which compensate them for the provision of global environmental benefits, including GEF financing, warrants closer investigation. There are, of course, problems, not least because some feel that bargains of this kind compromise the sovereignty of the developing country. Others would argue that such modification of resource rights is a small price to pay for the economic and environmental benefits that ensue.

### **Other Innovative Sources of Finance**

8.48 Market-based instruments that generate revenues and global value appropriation offer two of the means of financing sustainable development in a world where traditional sources of finance such as foreign aid appear limited. Environmental Funds offer another way of securing finance. These Funds can be generated from revenues obtained from various forms of charges and taxes. In Turkey, for example, a Pollution Prevention Fund is financed from some of the taxes on motor vehicles and from charges for the issue of pollution permits. In Algeria, the National Environmental Fund is financed from charges on airline tickets. In some cases, such as Sri Lanka, Funds have initially been financed by donor contributions. Environmental Funds are not therefore creating something from nothing – a tax or charge base has to exist. But there is evidence that people will more willingly pay a charge if they know that it is being earmarked for an environmental purpose. At the moment, these Funds tend to be marginal in terms of

resources raised and expenditures on environmental problems, and they raise the same problems of finding management capacity to handle them. Nonetheless, they are growing in number and extent.

## **Sectoral Policy**

8.49 The previous sections have outlined some of the critical responses that need to be investigated, and where appropriate pursued by small states. Central to policies for sustainable development are domestic reforms on resource and property rights, the correction of price distortions to achieve cost recovery, the implementation of market-based instruments for full cost recovery, proper accounting procedures and economic valuation of environmental assets, and the capture of environmental value through global bargains which reflect the global value of indigenous assets. How do these policy measures translate into sectoral policy? Clearly, measures must be tailored to suit specific issues in specific countries but the 'menu' of measures can best be summarised in a matrix – see Table 8.3. The examples are illustrative only but indicate the wide array of measures that might be adopted to control problems in each sector. As an example, waste management policy can be facilitated by imposing charges on those forms of waste disposal considered to be undesirable because, say, land for landfill is scarce, or because disposal creates a local nuisance. Carefully designed so that other problems do not emerge (e.g. 'flytipping' – illegal landfill), such taxes may yield revenues which can be used to give a subsidy (a credit) to recycling activities. Alternatively, the saved waste disposal costs from recycling can be used to increase the financial return to recycling activity. Liability systems make land users liable for damages e.g. land contamination, whilst land reclamation bonds are taxes on mining and other extractive activities held as bonds and returned to the land owner on successful reclamation of the land at the end of the economic activity. Solid waste disposal is a particularly sensitive issue in many small states which have limited land area or where disposal at sea is not recommended for environmental reasons.

## **Recommendations**

8.50 To reduce environmental vulnerabilities, **small states need to implement strategies which address their most urgent environmental problems and integrate environmental considerations in the earliest stages of economic policy-making.** While their vulnerabilities are shared by many developing countries, they impact on small states in ways which magnify the risk and so require greater and more urgent action than is the case in larger states. Measures to reduce these vulnerabilities also require significantly greater support at regional and international levels.

8.51 At the international level, small states should take a direct interest in **promoting the full and effective implementation of a number of environmental conventions and agreements**. Among these are the UN Framework Convention on Climate Change; the Convention on Biological Diversity; the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Safe Disposal; the new International Tropical Timber Agreement and the recommendation of the UN Intergovernmental Panel on Forests; the UN Convention to Combat Desertification; the UN Convention on the Law of the Sea; the UN Agreement on the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks; and the 1995 Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities.

**Table 8.3 Options for Sectoral Policy**

| Sector                     | Issue                                                                                                                                                                                 | Instruments                                                                                                                                                                        |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Macroeconomy               | Sustainability                                                                                                                                                                        | Resource accounting and sustainability indicators<br>Environmentally sensitive economy wide measures                                                                               |
| Agriculture                | Pollution runoff<br>Soil erosion<br>Pesticide abuse                                                                                                                                   | Remove subsidies<br>Input charges (fertiliser, pesticides)<br>Property rights (soil conservation)                                                                                  |
| Forestry                   | Deforestation                                                                                                                                                                         | Concession bidding<br>Deforestation taxes/royalty taxes<br>Resource franchise agreements (debt for nature, etc.)                                                                   |
| Water                      | Scarcity<br>Pollution<br>Land sterilisation through over-use                                                                                                                          | Remove subsidies<br>Extraction charges<br>Effluent charges<br>Irrigation charges<br>Tradeable water rights                                                                         |
| Solid waste                | Local nuisance (odour, vermin)<br>Land scarcity<br>Leachate runoff (landfill)<br>Air pollution (incinerators)<br>Global pollution (landfill-methane; incinerators - CO <sub>2</sub> ) | Landfill taxes<br>Recycling credits<br>Deposit-refund systems<br>Liability (for hazardous waste)                                                                                   |
| Wildlife/ecosystem/tourism | Over-use<br>Pollution                                                                                                                                                                 | Entry pricing for carrying capacity and revenue maximisation<br>Community incentives<br>Biodiversity prospecting (intellectual property rights)<br>Resource franchising agreements |
| Seas and coastal zones     | Overfishing<br>Coastal pollution<br>Overdevelopment                                                                                                                                   | Tradeable fishing quotas<br>Tradeable development rights                                                                                                                           |

8.52 As the **June 1997 Rio+5 Special Session** of the UN General Assembly in New York clearly revealed, there are serious shortfalls in implementation. The consequences of this are felt in all countries, although small states remain particularly vulnerable. The areas where urgent action needs to be taken in their interest are:

- promoting, in association with Alliance of Small Island States (AOSIS), an effective agreement to reduce greenhouse gas emissions, for adoption by the Conference on Parties to the Convention on Climate Change later this year, as well as assisting the most vulnerable small states to monitor climate change and sea-level rise and protect themselves against their adverse impacts;
- swift ratification and effective implementation of the Convention on Desertification, especially the operation of the Global Mechanism to mobilise funds for its implementation, which has been delayed by disputes over its nature and role;
- support for measures to enhance the management of EEZs, and protect fisheries against illegal fishing by distant water fishing nations, **possibly through a Commonwealth fisheries protection agreement**;
- mobilising support in the international community for full implementation of the Barbados Programme of Action, including accelerating implementation of the Small Island Developing States Information Network (SIDSNET) and Small Island Developing States Technical Assistance Programme (SIDSTAP). **The Commonwealth should play an active role in the 1999 review of the Programme.** The provision of assistance to small states with their technical preparations for the review would also be useful.

8.53 International action is also necessary to mobilise resources to finance sustainable development and compensate for the impacts of natural disasters. The reduction of ODA has been a major constraint in implementing international agreements. This issue dominated the proceedings of the June 1997 Rio+5 UN Special Session. Although the **Global Environment Facility** has emerged as the major multilateral funding mechanism for global environment protection, its resources are modest in relation to needs and its decision-making processes on project approval and disbursements have tended to be complex and cumbersome, inhibiting small states from seeking access to its resources. There is also concern that while the GEF meets the incremental costs of projects in developing countries which help to reduce global warming,

there is no comparable mechanism to fund projects (e.g. construction of sea defences) to protect countries from its consequences. It is therefore imperative that:

- the GEF be adequately replenished and further streamlined to improve its operational scope and efficiency;
- the decline in ODA be reversed and that resources be targeted toward supporting environmentally sustainable development.

8.54 There is also a strong case for extending the provision of ODA in the case of **natural disasters**. At present, aid for humanitarian relief is available, but concessional financing to re-build costly infrastructure damaged by natural disasters is much harder to obtain. Small states should seek to establish a natural disasters compensatory financing facility within the UN system which would provide prompt and adequate funds for rehabilitation and reconstruction, bearing in mind both the relatively greater impact that natural disasters have on them and the relatively higher costs of infrastructure than for larger states.

8.55 Small states should also investigate and encourage **innovative approaches to insurance in disaster prone zones**. Neither the use nor the availability of insurance in alleviating the impact of natural disasters is yet satisfactory: individuals residing in hazard-prone areas and commercial insurance companies are reluctant to deal with the problem because of the uncertainty of the risk and the costs incurred. Government insurance funds necessarily tend to be small in smaller countries and vulnerable to single large disaster claims. There is therefore a need to pool national, regional and international resources, both public and private, if comprehensive coverage is to be offered. The Commonwealth Secretariat has investigated the problem and set out a proposal for a multilateral facility which would reinsure catastrophic risks in a central pool. The central pool would be funded by the premiums from the national pools and by some 'seed' money from the UN natural disasters budget. The World Bank's Multilateral Investment Guarantee Agency could take on the task of managing such a facility. This proposal has considerable merit, although it needs further elaboration. Accordingly, we endorse the general thrust behind the proposal and **recommend that urgent consideration be given to the practical problems of implementing such an international insurance system.**

8.56 Small states also need to identify other **innovative forms of finance**. Among those suggested earlier are debt-for-nature swaps; developing partnerships with the private sector to exploit biodiversity and share equitably in the consequent benefits; resource franchise

agreements; and the establishment of environmental trust funds. There is considerable scope for such measures in conserving biodiversity and coral reefs, managing forests sustainably, and improving fisheries management. Others include measures which market products which conform to sustainable development practices, as proposed in the case of bananas from the Eastern Caribbean. **Small states should be given appropriate international and regional assistance in identifying such sources of finance** and, as crucially, technical support in negotiating such agreements with the private sector, NGOs and donor agencies.

8.57 Evidence is mounting that **market-based economic instruments** are often a more cost-effective way of achieving environmental goals than are traditional 'command and control' regulatory approaches. This involves the removal of government subsidies, which encourage high-pollution and over-exploitation of resources by lowering the 'price' of pollution and resource consumption; and the proper pricing of goods and services to reflect their 'true' environmental costs, thereby creating the incentives for resources to be used in an environmentally sustainable manner. Among the sectors in small states where such approaches would yield immediate benefit are tourism (entry charges to terrestrial and marine national parks and diving fees for access to coral reefs); efficient energy pricing and the removal of subsidies which encourage profligate energy consumption; pricing water as an economic good at a level which reflects its scarcity and environmental cost, with due regard to the need to satisfy basic human needs for adequate and safe water; and the use of tradeable fishing quotas, where appropriate, to control fishing. Small states should consider adopting these measures as a matter of priority.

8.58 This will require action by governments both to **incorporate environmental thinking into macroeconomic management** and to strengthen capacity in policy formation and implementation. The former requires proper valuation of the environment through measures such as 'green national accounting'. The latter requires improving or establishing co-ordination within and between national agencies responsible for development planning, natural resource management and environmental monitoring and protection. Other priorities include strengthening capacities:

- for biodiversity monitoring and assessment, particularly in some small islands where species endemism is very high but the capacity for biodiversity conservation is limited;
- for sustainable forest management and its financing in countries which face institutional, human and other resource constraints;

- for monitoring water quality and increasing investment in projects designed to increase access to safe water and sanitation;
- in countries which suffer from desertification and drought, to promote environmentally sustainable agriculture and implement comprehensive rural development policies;
- to improve the surveillance and monitoring of EEZs;
- to improve the implementation of effective coastal zone management policies.

In many of these areas regional co-operation would provide significant additional inputs to improving national capacity.

8.59 Finally, we welcome major environmental initiatives of global significance taken by small states. A prominent example is the **Iwokrama International Rainforest Programme** in Guyana. The programme is unique in attempting to demonstrate that the tropical rainforest can be so managed that environmental and economic goals can be pursued in harmony and mutual support. It can become a model for best practice with benefits flowing to Guyana, the rest of the Commonwealth and the global community. **We urge Commonwealth and non-Commonwealth donors to provide the support which the Programme now needs** in order to become financially viable and fulfill its mission.