# Island ecosystems Conservation and sustainable use

### Problems and Challenges

#### Introduction

Humans have always relied on the earth's biological resources for their economic and social development. However, historical data have shown that pervasive human disturbance of ecosystems has been taking place for centuries, often resulting in ecological extinction worldwide (Jackson et al, 2001). This has increased significantly over the last several decades. With increasing degradation of ecosystems, habitat loss and species extinction, there is a growing recognition that current use (or misuse) of these resources is not sustainable unless countries develop measures for the conservation and sustainable use of these resources. Sustainable use of these resources is therefore an imperative if present and future generations are to benefit from them.

While biodiversity loss has been occurring at a global scale, island ecosystems have been found to be far more affected. Significant extinction of island endemics has been taking place since prehistoric times, however the colonization of islands by humans have significantly accelerated the rates of species extinction. Steadman (1997) estimates that

post-human rates of extinction are twice that of pre-human rates. Review of data on species extinctions, beginning c. AD 1600, have shown that many more plant and animal species have become extinct from islands¹ than from continents (Whittaker, 1998). Also, although one in six plant species occur on oceanic islands, one in three of all known threatened plant species are island endemics. Island ecosystems appear to be less resilient than mainland systems.

#### Island Ecosystems.

Island ecosystems are characterized by:

- Species poverty, that is, fewer species per unit area than mainland;
- Disharmony, in that they tend to have a different balance of species compared to equivalent patches of mainland and this is more marked (accentuated) with increasing isolation;
- Richness in endemism. At the global level, collectively, islands contribute to biodiversity disproportionately to their land area. Although islands constitute 3% of the land surface of the world, one in six of the earth's known plant species occur on oceanic islands (Whittaker

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- A higher representation of alien species in their biota than do mainland systems
- Increased vulnerability to natural disasters such as hurricanes and earthquakes.

# Small Island Developing States (SIDS)

#### Agenda 21

In 1992, the United Nations Conference on Environment and Development (the "Earth Summit") was held in Rio de Janeiro, Brazil, marking the twentieth anniversary of the Stockholm conference which had placed



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extinction. Steadman (1997) estimates that

six of the earth's known plant species occur on oceanic islands (Whittaker 1998);

1 While islands may be classified into those within land masses and those within seas, for the purposes of this paper, islands are discrete entities with clearly defined limits surrounded by the sea and able to sustain a supply of fresh water.

environmental concerns firmly before the global community. With the growing awareness of the direct link between economic development and the conservation of the natural environment and the realization that environmental conservation was not possible without economic development, the focus of the Earth Summit was on sustainable development, that is: development that "meets the needs of the present generation without compromising the ability of future generations to meet their own needs." Five major instruments were signed by world leaders at Rio, which included Agenda 21 and the Convention on Biological Diversity.

Agenda 21 can be considered a blue print for sustainable development. Section 1 of the preamble states "However, integration of environment and development concerns and greater attention to them will lead to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this on its own; but together we can - in a global

partnership for sustainable development". It recognises the special challenges which face SIDS in trying to achieve sustainable development. Chapter 17.G. outlines "the basis for action" and identifies two objectives necessary in addressing the problems of sustainable development (Box 1). Importantly, it recognizes the need for cooperation from the international community in achieving sustainable development.

# The Barbados Programme of Action (BPOA)

O, Island in the Sun
Willed to me by my father's hand.
All my days I will sing in praise
of your forest waters, and shining sands.

Chorus from "Island in the Sun", Irving Burgie, 1956.

Images of beautiful white sands, clear clean waters, this was, and probably still is, the image of islands through the eyes of many potential travelers. But does this still hold true for many small island developing States? Population growth coupled with unsustainable economic



development have resulted in degradation of the natural ecosystems of small island developing States, systems essential for sustained economic and social development.

In 1994, the United Nations General Assembly convened the Global Conference on the Sustainable Development of small island developing States to provide a comprehensive framework for the implementation of Agenda 21 in the specific context of these States. The focus of the Programme of Action is on sustainable development through sustainable use of oceans, coastal environments, biodiversity, and human resources. It recognizes the special characteristics of SIDS and the problems and challenges faced by these States in working towards sustainable development. It also recognizes that many of these problems are directly related to small size and that the small size of SIDS "means that the environment and development are closely interrelated and interdependent". Sustainable use of island ecosystems is therefore critical for their sustained economic development.

Constraints to sustainable development in SIDS include:

- Increased vulnerability to natural disasters and environmental change such as climate change resulting in sea level rise. (At least thirteen of the twenty five most disasterprone countries are SIDS);
- High degrees of endemism but with small populations increasing the risk of extinctions;

Box1. Sustainable development of small islands, Basis for action and Objectives (taken from Agenda 21).

#### Sustainable development of small islands

#### **Basis for action**

Small island developing States and islands supporting small communities are a special case both for environment and development. They are ecologically fragile and vulnerable. Their small size, limited resources, geographic dispersion and isolation from markets, place them at a disadvantage economically and prevent economies of scale. For small island developing States the ocean and coastal environment is of strategic importance and constitutes a valuable development resource.

Their geographic isolation has resulted in their habitation of a comparatively large number of unique species of flora and fauna, giving them a very high share of global biodiversity. They also have rich and diverse cultures with special adaptations to island environments and knowledge of the sound management of island resources.

Small island developing States have all the environmental problems and challenges of the coastal zone concentrated in a limited land area. They are considered extremely vulnerable to global warming and sealevel rise, with certain small low-lying islands facing the increasing threat of the loss of their entire national territories. Most tropical islands are also now experiencing the more immediate impacts of increasing frequency of cyclones, storms and hurricanes associated with climate change. These are causing major set-backs to their socio-economic development.

Because small island development options are limited, there are special challenges to planning for and implementing sustainable development. Small island developing States will be constrained in meeting these challenges without the cooperation and assistance of the international community.

#### Objectives

States commit themselves to addressing the problems of sustainable development of small island developing States. To this end, it is necessary:

- (a) To adopt and implement plans and programmes to support the sustainable development and utilization of their marine and coastal resources, including meeting essential human needs, maintaining biodiversity and improving the quality of life for island people;
- (b) To adopt measures which will enable small island developing States to cope effectively, creatively and sustainably with environmental change and to mitigate impacts and reduce the threats posed to marine and coastal resources

- Heavy dependence on the coastal and marine environment leading to degradation of the coastal marine ecosystems;
- Limited freshwater resources (small watersheds);
- Increasing amounts of hazardous waste substances with limited facilities for waste disposal;
- Small vulnerable economies dependent on:

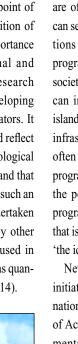
   i) narrow resource bases ii) international trade and in many cases reliant on preferential trading arrangements;
- limited influence on international trade rules;
- Small domestic markets unable to provide significant economies of scale;
- Inadequate means to exploit natural resources on a sustainable basis;
- High levels of migration of skilled human resources:
- Limited access to concessionary resources due to higher per capita income than that of other developing countries and
- Limited arable land which is used primarily for the production of agricultural commodities for export, such as sugar, cocoa and bananas.

Human well-being is central to the BPOA. Here the environment meets the needs of people, and as such, should be conserved and sustainably used in order to meet the needs of future generations. In the programme are actions and policies for implementation at the national, regional and international levels, towards achieving sustainable development over

the short, medium and long term. It identifies 14 priority areas for action which are:

- 1. Climate Change
- 2. Natural and environmental disasters
- 3. Management of Wastes
- 4. Coastal and Marine Resources
- 5. Freshwater Resources
- 6. Land Resources
- 7. Energy Resources
- 8. Tourism Resources
- 9. Biodiversity resources
- 10. National Institutions and Administrative Capacity
- 11. Regional Institutions and Technical Cooperation
- 12. Transport and Communication
- 13. Science and Technology
- 14. Human Resource Development

Chapter 15 deals with implementation, monitoring and review. However, a point of interest in this chapter is the recognition of the vulnerability of SIDS and the importance of working with national, regional and international organizations and research centres in continuing work on developing vulnerability indices and other indicators. It further states that these indices should reflect the status of SIDS and integrate ecological fragility and economic vulnerability and that consideration should be given to how such an index, as well as relevant studies undertaken on small island developing States by other international institutions, might be used in addition to other statistical measures as quantitative indicators of fragility. (Para.114).



Chapter 9 on Biological Resources directly addresses actions for the conservation and sustainable use of ecosystems and will be discussed further in the context of the Convention on Biological Diversity.

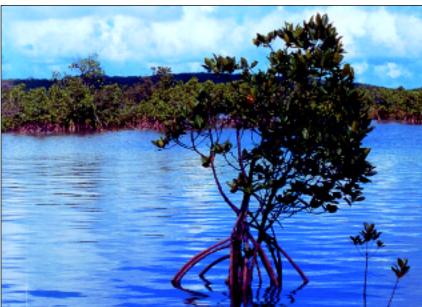
#### **Review of BPOA Implementation**

Conserving their ecosystems and ensuring sustainable use are central towards the sustainable development of SIDS and pose tremendous challenges. Implementation of the BPOA requires human resource development, institutional development (for the integration of environmental polices in national planning and financial resources) public education and participation, and additional financial resources. The inherent vulnerability of SIDS creates unplanned demands on these states which are already grappling with very limited resources. Small island developing states are often faced with natural disasters which can seriously erode national budgetary allocations towards environmental conservation programmes as the immediate needs of the society must take priority. A single hurricane can inflict tremendous damage to a small island economy, destroying agricultural crops, infrastructure and dwellings. Governments often must use resources allocated to other programmes to meet the immediate needs of the population. Quite often environmental programmes are not seen as priority issues, that is, not 'bread and butter issues', but really 'the icing on the cake'.

Nevertheless, there have been a number of initiatives at the international, regional and national levels to implement the Programme of Action. There has been significant implementation at the national level, although many of these initiatives/projects are not readily identified as implementing the BPOA. Binger et al (2002) reports that estimates indicate that 70% of the tasks and actions have been carried out by the SIDS themselves. This certainly indicates a commitment by the SIDS to the Programme of Action.

Some initiatives at the international level include:

the United Nations Development Programme (UNDP) Capacity 21, which was UNDP's main instrument to build capacities in developing countries to implement Agenda 21. An important project of this



initiative is the establishment of the Small Island Developing States Network, SIDSNET<sup>2</sup>, housed in the United Nations Department of Economic and Social Affairs (UN-DESA), which facilitates the exchange of information among SIDS. However, access by stakeholders to this facility is constrained by the high cost of internet access and computers, unreliable electricity supplies and poor telecommunications infrastructure. There is also the problem of long term sustainability.

 the assistance provided by United Nations Environment Programme (UNEP) in the areas of water resources management, waste management and the further development of the Environmental Vulnerability Index.

Comprehensive but not exhaustive reports on implementation carried out at the national, regional and international level can be found in the United Nations General Assembly Reports A/56/170, July 10, 2001<sup>3</sup> and A/57/131, July 2, 2002<sup>4</sup>.

The United Nations Commission on Sustainable Development (CSD), continuously reviews the implementation of the Barbados Programme of Action and at its seventh session (1999), carried out a full review for the Special Session of the United Nations General Assembly held later that year. The report of the Secretary General (E/CN.17/1999/6), benefited from the outcomes of four regional meetings, and is a very comprehensive review of actions taken at the national regional and international level. It contains inter alia: progress achieved, problems and constraints encountered in the implementation, major emerging sustainable development concerns and problems (such as marine spills, intensification of natural disasters, shortage of fresh water, tightening financial situation) and priorities identified by the various regions for future action. A number of sectoral and cross-sectoral priorities were identified by all regions, (Caribbean, Indian Ocean, Mediterranean and Atlantic Ocean, and Pacific). All thematic programme areas of the BPOA were identified as priority areas of equal

importance requiring immediate attention.

The report noted that a great deal of effort had been made by SIDS at the national, regional levels with international support resulting in "perceptible" progress! .It identified constraints encountered in the implementation process which included: "finance, skilled human resources for implementation of sustainable development measures, and suitable development institutions and administrative capacity". These constraints are not likely to go away without additional international assistance.

In September 1999, a comprehensive assessment of the implementation of the BPOA was undertaken by the 22nd Special Session of the United Nations General Assembly, the review of the CSD being the basis of the assessment. "Resource mobilization" was identified by the general Assembly as one of the main challenges for small island developing States. It further noted that "Adequate financial resources at all levels remain crucial to the continued implementation of the Pogramme of Action." It also called upon the small island developing States in partnership with the international community to, inter alia, complete the quantitative and analytic work on a vulnerability index for small island developing States, "preferably before 2000".

In September 2002, at the World Summit on Sustainable Development (WSSD), the special case of SIDS was reaffirmed. The gains made by SIDS towards sustainable development was acknowledged, but also recognized was that "they are increasingly constrained by the interplay of adverse factors clearly underlined in Agenda 21, the Programme of Action for the Sustainable Development of Small Island Developing States and the decisions adopted at the twenty-second special session of the General Assembly."

Calls for actions at all levels include:

- Provision of adequate financial resources, including through GEF focal areas;
- Transfer of environmentally sound technologies and assistance for capacity-building from the international community;
- Further implementation of sustainable Fisheries;

- Support, for the development and further implementation of: (i) Small island developing States-specific components within programmes of work on marine and coastal biological diversity; (ii) Freshwater programmes for small island developing States, including through the GEF focal areas;
- Effective reduction, prevention and control of waste and pollution;
- Develop community-based initiatives on sustainable tourism by 2004, and build the capacities necessary to diversify tourism products, while protecting culture and traditions, and effectively conserving and managing natural resources;
- Support the finalisation and subsequent early operationalisation, on agreed terms, of economic, social and environmental vulnerability indices and related indicators as tools for the achievement of the sustainable development of the small island developing States;
- Assist small island developing States in mobilising adequate resources and partnerships for their adaptation needs relating to the adverse effects of climate change, sea level rise and climate variability and
- Support efforts by small island developing States to build capacities and institutional arrangements to implement intellectual property regimes;

There was also a call for a 10-year comprehensive review of the BPOA at a high-level international meeting in the year 2004. (This meeting will take place in Mauritius in 2004).

In a follow-up to WSSD, the United Nations General Assembly adopted Resolution A/57/262<sup>5</sup> which recognizes the challenges to SIDS in the context of development and, inter *alia* urges all relevant organizations to finalise the work on the vulnerability index, "taking into account the particular



<sup>&</sup>lt;sup>2</sup> http://www.sidsnet.org

<sup>&</sup>lt;sup>3</sup> http://www.un.org/documents/ga/docs/56/a56170.pdf

 $<sup>^4\</sup> http://www.ods-dds-ny.un.org/UNDOC/GEN/NO2/459/97/PDF/NO245997.pdf? OpenElement$ 

circumstances of and needs of small island developing States."

Preparations are currently under way for the "BPOA + 10" review to be held in August/September 2004 in Mauritius. What are the expected outcomes of this meeting? While achievements will certainly be reported in the various areas through projects and initiatives, sectoral areas such as Coastal and marine resources, Land Resources, Tourism Resources, Freshwater resources and Biodiversity resources will remain priority areas for action. In fact all fourteen areas will remain priorities for action and there are new issues emerging such as growing terrorism and its attendant impact on tourism and travel. This does not mean that implementation of the Porgramme of Action has been unsuccessful, but that the achievement of major goals will take time. After all, we have been utilizing the earth's resources from pre-historic times with little concern for the health of the ecosystems on which we are dependent. It has only been within the last few decades that we have realized that a healthy earth is critical for human survival and that the present rate of ecosystem degradation is not sustainable

# The Convention on Biological Diversity

The Convention on Biological Diversity, one of the so-called "Rio Conventions", was opened for signature at the "Earth Summit" in 1992 and entered into force on December 29, 1993. At present there are 187 Parties to the Convention. Its genesis was from the realization that sustainable development could not be achieved without the conservation and sustainable use of the earth's resources and, importantly, through equitable sharing of benefits from the use of such resources. The objectives of the convention are: "the conservation of biological diversity<sup>6</sup>, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding."

Since the first session of the meeting of the Parties in 1993, the convention has considered several thematic areas and crosscutting issues. It has developed programmes of work for the following thematic areas: marine and coastal biodiversity, agricultural biodiversity, forest biodiversity, the biodiversity of inland waters, and dry and sub-humid lands. The Convention's recently developed Strategic Plan recognizes it as an essential instrument in achieving sustainable development. It has been recognized in Johannesburg Plan of Implementation as the "key instrument for the conservation and sustainable use of biological diversity and the fair and equitable sharing of benefits arising from use of genetic resources."

It could therefore be considered one of the legal frameworks under which sections of the BPOA could be implemented. Already the CBD makes special reference to SIDS in its work and there is a certain amount of overlap between the CBD's work and the priority areas identified in the BPOA.

This is shown in Table 1. (The table is not exhaustive).

As seen from the table, there are several areas in the BPOA that are currently being considered by the Convention on Biological Diversity through its thematic areas and crosscutting issues. This opens the opportunity for synergies between the two instruments. How will SIDS benefit? Should both instruments continue to work separately? Will a collaborative approach be more beneficial to SIDS? Should the CBD with its focus on conservation and sustainable use take the lead in the implementation of the BPOA in the areas that are covered by both? Certainly these questions are worthy of consideration. Most SIDS are Parties to the CBD.

#### Recommendations from the CBD process relevant to Island ecosystems.

In March of 2003, at the CBD's Open-ended Inter-Sessional Meeting on the Multi-Year Programme of Work of the Conference of the Parties up to 2010 (MYPOW), held in Montreal, a number of the recommendations

Table 1. Comparison of Thematic Programmes and Cross – cutting Issues under the Convention on Biological Diversity with some areas of the Barbados Programme of Action

| Convention on Biological Diversity:<br>Programmes/Issues            | Barbados Programme of Action: corresponding priority areas |
|---|--|
| Thematic Programmes   |  |
| Agricultural Biodiversity   | ■ Freshwater Resources                                     |
| <ul> <li>Dry and Sub-humid Lands Biodiversity</li> </ul>            | Biodiversity Resources                                     |
| ■ Forest Biodiversity   | ■ Freshwater Resources                                     |
| ■ Inland Waters Biodiversity  | ■ Freshwater Resources                                     |
| Marine and Coastal Biodiversity                                     | Coastal and Marine Resources                               |
| Cross-cutting Issues  |  |
| <ul> <li>Access to Genetic Resources and Benefit Sharing</li> </ul> | <ul> <li>Biodiversity Resources</li> </ul>                 |
| ■ Alien Species   | Biodiversity Resources                                     |
| <ul> <li>Article 8(J): Traditional Knowledge,</li> </ul>            | Biodiversity Resources                                     |
| Innovations and Practices   | & Human Resource Development                               |
| ■ Biological Diversity and Tourism                                  | Tourism Resources  |
| <ul> <li>Climate Change and Biological Diversity</li> </ul>         | Climate Change & Sea Level Rise                            |
| ■ Economics, Trade and Incentives                                   |  |
| ■ Ecosystem Approach  |  |
| Global Strategy for Plant Conservation                              | Biodiversity Resources                                     |
| ■ Global Taxonomy Initiative  | Biodiversity Resources                                     |
| ■ Impact Assessment, Liability and Redress                          | Biodiversity Resources                                     |
| <ul><li>Indicators</li></ul>  | Biodiversity Resources                                     |
| ■ Protected Areas   | Biodiversity Resources                                     |
| ■ Public Education and Awareness                                    | Biodiversity Resources                                     |
|   | & Human Resource Development                               |
| ■ Sustainable Use of Biodiversity                                   | <ul> <li>Biodiversity Resources</li> </ul>                 |
| ■ Transfer of Technology and  | <ul> <li>Biodiversity Resources</li> </ul>                 |
| Technology Cooperation (for COP 7)                                  |  |

<sup>&</sup>lt;sup>5</sup> http://www.un.org/esa/sustdev/sids/res\_57.ht

<sup>&</sup>lt;sup>6</sup> Biological diversity is defined in the Convention as "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part, this includes diversity within species, between species and of ecosystems.

made for consideration at the seventh meeting of the Parties (COP 7), to be held early 2004, could have a positive impact on implementation of the BPOA.

# World Summit on Sustainable Development (WSSD).

In its analysis of the outcome of the World Summit on Sustainable Development as it relates to the Convention process, the MYPOW recommended inter alia, that at its seventh meeting the COP consider the outcome of the World Summit on Sustainable Development relating to hotspots, ecological networks and corridors in the context of the work on protected areas, taking into account other relevant thematic programmes and crosscutting issues. Also, with regards to the call for the negotiation within the framework of the convention an international regime to promote and safe guard the fair and equitable sharing of benefits arising out of the utilization of genetic resources, the MYPOW recommended that its Ad Hoc Open-ended Working Group on Access and Benefit-sharing consider the issue and provide advice to the Conference of Parties at its seventh meeting.

## Multi-year Programme of Work Review

In its review of the of the CBD's multi-year programme the MYPOW recommended that no new issues should be taken up for indepth consideration, with the exception of Island Biodiversity which is to be discussed at COP 8.

#### The Way Forward

If adopted at COP 7, these recommendations provide opportunities for further addressing the special circumstances affecting island ecosystems and in particular the implementation of the BPOA. The issues of hotspots and protected areas are very pertinent to SIDS. Conservation International notes that "Several hotspots are tropical island archipelagos, like the Caribbean and the Philippines, or relatively large islands, like New Caledonia, or combinations of both, like Sundaland." Already the CBD's subsidiary body has started work on ecological networks in

Marine Protected Areas for consideration at COP 7. The call for the negotiation of an international regime on Access and Benefitsharing under the CBD by the WSSD should be taken into account at the upcoming review of the BPOA and ways to prevent duplication should be identified.

An in depth consideration of island biodiversity at the eighth meeting of the Conference of the Parties could provide an opportunity to explore ways and means to further implement the BPOA. How will the issue of Island Biodiversity be addressed? Certainly there are existing thematic and cross-cutting areas/issues in which island biodiversity can be addressed. Some of these are:

- Coastal and Marine Biodiversity, in particular looking at marine protected areas and the development of national marine and coastal biodiversity management frameworks;
- Indicators: development and testing of indicators within the context of sustainable use i.e. biological indicators, economic indicators and social indicators, taking into consideration the increasing vulnerability of island ecosystems;
- Public Education and Awareness, specially targeted at communities, coastal and inland, on the effects of their activities on the various ecosystems which support major economies such as tourism;
- Global Taxonomic Initiative, specifically looking at island flora and fauna, and
- Sustainable use: development of a simple practical guide for sustainable use for middle level managers, taking into account the draft Addis Abba Principles and the shortage of skilled personnel in SIDS.

There are of course many more areas for collaboration between the two instruments. In particular, the critical factor of funding must be addressed if there is to be sustained and significant implementation of activities which address island ecosystem degradation and loss. For improved access to international funding, there will need to be further guidance to the Financial Mechanism of the CBD, the Global Environment Facility. Decisions would have to be taken as to how important are island ecosystems in the global context.

Are they collectively globally significant? If so, should they be afforded special consideration for funding? The WSSD Plan of implementation states "Oceans, seas, islands and coastal areas form an integrated and essential component of the Earth's ecosystem and are critical for global food security and for sustaining economic prosperity and the well-being of many national economies, particularly in developing countries." (Para. 30). Also, should the resilience/vulnerability of island ecosystems be taken into consideration and be a significant criterion for accessing official development assistance?

Conservation and sustainable use of island ecosystems will require more than the development of principles and work programs, ratification of international treaties, and external funding. For interventions to be sustainable there must be recognition at the national level of the importance of island ecosystems and the fragility of these systems. At the global level there must be a commitment to address the trade-related issues of SIDS "in a manner commensurate with their special circumstances and in support of their efforts towards sustainable development".

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<sup>&</sup>lt;sup>7</sup> http://www.biodiversityhotspots.org/xp/Hotspots/hotspotsScience/