

**CONVENTION ON  
BIOLOGICAL  
DIVERSITY**

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**AD HOC TECHNICAL EXPERT GROUP ON  
PROTECTED AREAS**

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**PROTECTED AREAS AND THE CONSERVATION AND SUSTAINABLE USE OF  
BIOLOGICAL DIVERSITY**

*Note by the Executive Secretary*

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## I. THE CONVENTION ON BIOLOGICAL DIVERSITY AND PROTECTED AREAS

### 1.1 Introduction

1. The central role of protected areas in conservation and sustainable use of biological diversity has been repeatedly emphasized in decisions of the Conference of the Parties of the Convention on Biological Diversity (CBD). In addition, Parties themselves have consistently identified their efforts to develop and maintain their national protected area systems as a central element of their strategy to implement the Convention. Experience shows that a well-designed and managed system of protected areas can form the pinnacle of national efforts to protect and sustainably use biological diversity. Such a system complements other measures taken towards conservation and sustainable use of biological diversity outside protected areas.

2. The Convention on Biological Diversity works with many partner organizations, conventions and initiatives in facilitating conservation and sustainable use via protected areas. These include the IUCN World Commission on Protected Areas (WCPA); the UNEP World Conservation Monitoring Centre (UNEP-WCMC); the World Resources Institute (WRI); The Nature Conservancy (TNC); the UNESCO Man and the Biosphere Programme (MAB); the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage; the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention); the Convention on the Conservation of Migratory Species of Wild Animals and the associated agreements; the Global Environment Facility (GEF); and various regional agreements and programmes. As an example of ongoing collaboration, input for this paper has been received from all of these organizations and other members of an informal liaison advisory group established by the Secretariat<sup>1</sup>.

### 1.2 Articles of the Convention concerning protected areas

3. The term “protected area” is defined in Article 2 of the Convention as “a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives”. Paragraphs (a), (b), (c) and (e) of Article 8 contain specific references to protected areas and provide that Parties should:

(a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity;

(b) Develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity;

(c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use; and

(d) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas.

4. In addition, Article 8(j) and many other articles of the Convention, such as, for example, Articles 6, 7, 10, 11, 12 and 13 are relevant to protected areas.

### 1.3 Decisions of the Conference of the Parties on protected areas

5. The Conference of the Parties specifically considered Article 8 at its second and third meetings, where it emphasized the importance of regional and international cooperation, stressed the importance of disseminating relevant experience and requested the Executive Secretary to provide suggestions on how the collection and sharing of relevant information and experience might be enhanced (decisions II/7 and III/9). The Conference of the Parties also instructed the financial mechanism to support Parties' efforts to implement Article 8 as a matter of urgency and priority (decisions I/4 and II/6).

6. Protected areas form a central element of the various thematic programmes work adopted at the fourth and subsequent meetings of the Conference of the Parties . Programme element 3 of the programme of work on marine and coastal biological diversity<sup>2</sup> is dedicated to marine and coastal protected areas. The two aims of this programme element are to facilitate research and monitoring activities related to the value and the effects of marine and coastal protected areas or similarly restricted management areas on sustainable use of marine and coastal living resources; and to develop criteria for the establishment of, and for management aspects of, marine and coastal protected areas. The Ad Hoc Technical Expert Group on Marine and Coastal Protected Areas, which finalized its work in 2002, was mandated by decision IV/5. The results of this Expert Group are being made available to the Expert Group as an information document (UNEP/CBD/AHTEG-PA/1/INF/5).

7. The programme of work on the biological diversity of inland water ecosystems<sup>3</sup> recommends the sharing of information and experience relevant to conservation and sustainable use of such ecosystems, specifically referring to use of protected areas and their management strategies for conservation and sustainable use of inland water ecosystems. The Conference of the Parties also specifically encouraged the implementation of the joint work plan with the Convention on Wetlands<sup>4</sup>.

8. The use and establishment of additional protected areas is identified as one of the necessary target actions for the implementation of the work programme on dry and sub-humid lands<sup>5</sup>. In addition, the programme of work on Article 8(j) includes a component on protected areas<sup>6</sup>.

9. In addition, the expanded forest programme of work, which was adopted in decision VI/22, contains a number of activities related to protected areas. The programme of work also calls for a meeting on forest protected areas, to be held back-to-back with the ninth meeting of SBSTTA.

#### ***1.4 Recommendations of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA)***

10. In recommendation I/8, paragraph 11(c), SBSTTA recommended exploring means to incorporate marine and coastal protected areas within a broader framework for multiple-use planning, as exemplified by UNESCO MAB biosphere reserves. Recommendation VII/6 on forest biological diversity includes, in the expanded programme of work, elements designed to ensure adequate and effective protected forest area networks.

11. Protected areas also play a role in the activities relating to the specific work plan on coral bleaching (recommendation VI/2). The value of taxonomic data in assisting protected areas site selection is recognized in recommendation VI/6, relating to the programme of work of the Global Taxonomy Initiative. In its recommendation VI/4, SBSTTA invited the collaboration of several protected areas programmes and initiatives to promote further the implementation of Article 8(h) within their mandates, through, inter alia, the development of guidance, best practices and pilot projects that address the threats of invasive alien species to particular sites or habitats, including means to enhance the capacity of ecosystems to resist or recover from alien species invasions. In addition, protected areas are mentioned in connection with sustainable tourism (recommendation VII/5), the Global Strategy for Plant Conservation (recommendation VII/8) and environmental impact assessment (recommendation VII/10).

#### ***1.5 National reports as a source of information about protected areas***

12. As a country driven process, developing policy is largely dependent on the information officially provided by Parties to the Convention. This information comes mainly in the form of national reports, the submission of which is required by Article 26 of the Convention. Thus far, two sets of national reports have been submitted. Thematic reports on protected areas have also been submitted. Additional information on a number of priority issues can also be found in case studies prepared by the Parties and submitted to the Secretariat.

13. From a preliminary assessment of these reports it is clear that for the vast majority of Parties the most important activity to implement their commitments under the Convention is their protected area network. Many of the reports contain a description of the protected area system within the country, the

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gaps in this systems and the action to be taken to address these lacuna. Consistently identified priorities and needs include ensuring that protected area systems cover the full range of biodiversity adequately, adequate legislation and effective management (including sufficient human and financial resources), effective integration between protected areas and the wider region, and effective involvement of all interested parties in the establishment and management of protected areas. Time permitting, a more concise summary of such information will be provided as a separate information document.

### ***1.6 Preparatory process on protected areas leading up to the seventh meeting of the Conference of the Parties***

14. The priority themes at the seventh meeting of the Conference of the Parties are: mountain ecosystems; protected areas; transfer of technology and technological cooperation; and follow-up from the World Summit on Sustainable Development. The preparation process leading up to the seventh meeting of the Conference of the Parties with regard to protected areas consists of a number of steps, of which the Ad Hoc Technical Expert Group on Protected Areas is one. An additional important source of input will be the Fifth IUCN World Congress on Protected Areas (September 2003). Specifically, the following are the main steps in the preparatory process leading up to the seventh meeting of the Conference of the Parties:

- The Ad Hoc Technical Expert Group on Marine and Coastal Protected Areas (MCPA AHTEG) concluded its work in 2002. The results of this work were considered at the eighth meeting of SBSTTA, in March 2003. These results provide an interesting and illustrative indication of what is feasible in the wider context of protected areas in general. The report of the Ad Hoc Technical Expert Group will be made available to the AHTEG on Protected Areas as an information document (UNEP/CBD/AHTEG-PA/1/INF/5);
- Thematic national reports on protected areas are due by 31 May 2003. These thematic reports are expected to provide in-depth information about national-level protected areas in the context of the implementation of the Convention;
- A strategic roundtable on protected areas, ecological networks and corridors will take place in the beginning of June. This meeting will provide input to the AHTEG and the ninth meeting of SBSTTA on the topic of ecological networks and corridors;
- The Ad Hoc Technical Expert Group on Protected Areas will meet from 10 to 14 June. The report of the Group, including a draft programme of work on protected areas, will provide the major input to the ninth meeting of SBSTTA;
- The Fifth IUCN World Congress on Protected Areas will take place in September 2003. A small "liaison group" will work throughout the Congress to incorporate the key Convention-relevant issues into a document for the ninth meeting of SBSTTA. The Congress organizers have actively worked with the Secretariat of the Convention to ensure that specific input will be provided to the Convention on all the key themes and issues addressed at the Congress;
- The ninth meeting of SBSTTA will take place from 10 to 14 November 2003. The report of the present AHTEG, as well as the draft programme of work, will be considered at this meeting. The recommendations of SBSTTA will form the basis on which the Conference of the Parties will consider the issue at its seventh meeting;
- The final decision on protected areas, including the programme of work, will be taken at the seventh meeting of the Conference of the Parties, to be held in Kuala Lumpur in the first quarter of 2004. The decision will be based on the consideration by the Conference of the Parties of the recommendations of SBSTTA at its ninth meeting;
- Following the seventh meeting of the Conference of the Parties, Parties, and international and regional organizations should proceed with implementation of the decisions of the Conference of the Parties, including the programme of work. The Secretariat of the Convention has an important role in facilitating this implementation.

15. It is hoped that the end results of this process would include the following:

- (a) Developing the scientific basis for international coordination by Parties of protected areas required in order to facilitate the conservation and sustainable use of biodiversity at the global, regional and national levels;
- (b) Fostering the development and adoption of best management principles, tools and practices consistent with the objectives of the Convention;
- (c) Identification of options and priority actions for the effective establishment and management of protected areas by Parties;
- (d) Fostering improved sharing of information and experience;
- (e) Promoting the coordination of the actions of international agreements and programmes that are concerned with protected areas; and
- (f) Providing a framework for the management of transboundary ecosystems consistent with the objectives of the Convention.

16. All of the above results will be consolidated into a multi-year programme of work on protected areas, which will include goals, objectives, specific activities, actors and time-frames.

### ***1.7 The mandate of the Ad Hoc Technical Expert Group on Protected Areas***

17. The AHTEG has an important function in providing advice relating to the establishment and management of protected areas, ultimately aimed at the development of a programme of work on protected areas under the Convention on Biological Diversity. Therefore, the input provided by the Expert Group will be a central component in determining how the issue of protected areas will be considered in the context of the Convention on Biological Diversity.

18. Accordingly, the AHTEG is to undertake the following tasks:

- (a) Review methods and approaches for the planning and management of protected areas including options for appropriate policies, strategies, and practices consistent with the objectives of the Convention;
- (b) Identify ecosystem and bioregional approaches to protected-area management and sustainable use of biological diversity;
- (c) Identify mechanisms to enhance stakeholder involvement;
- (d) Propose methods for developing systems plans and integrating biological diversity considerations into sectoral strategies and plans;
- (e) Identify options for management of transboundary protected areas; and
- (f) Based on its consideration of the above, propose options and priority actions required for effective establishment and management of protected areas.

## **II. STATUS, TRENDS, ROLES AND VALUES OF PROTECTED AREAS**

### ***A. Definition, extent and classification of protected areas***

#### ***2.1 Definition and objectives of protected areas***

19. The present, most widely accepted definition of a protected area was developed at the Fourth World Parks Congress in 1992 and describes:

“...an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.”

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20. In the past, protected areas were often equated with “national parks” such as the archetypical Yellowstone National Park established in the United States of America in 1872. This site and many that followed were perceived and managed as “wilderness areas” where there was no significant human impact, and where the place of humans was restricted to visitors.

21. Over time, understanding of the roles of protected areas has broadened considerably as it has become clear that there are many places where humans have a vital role in the landscape and are themselves part of ecosystem processes. Under this broader view, it also became clear that the history of protected areas is far older than Yellowstone, extending back to include ancient sacred sites, royal hunting reserves and restricted fishing areas, which may go back centuries or millennia and were declared and managed by a wide variety of governing entities from kings to local communities.

22. The importance of national parks and equivalent reserves was internationally recognized by a 1959 United Nations resolution<sup>7</sup>, which pointed out their value for the inspiration, culture and welfare of mankind, as well as their economic and scientific values. This resolution also began the process of compiling a worldwide list of protected areas.

23. The reasons why protected areas may be established and managed vary considerably from place to place, but in general, the main purposes of protected areas are:

- Scientific research;
- Wilderness protection;
- Preservation of species and genetic diversity;
- Maintenance of ecosystem services;
- Protections of specific natural and cultural features;
- Tourism and recreation;
- Education;
- Sustainable use of resources from natural ecosystems;
- Maintenance of cultural and spiritual attributes<sup>8</sup>.

24. In some areas, these objectives may be achieved as a side-effect of some other activity or condition, although the site is not formally considered a “protected area”. These “*de facto* protected areas” include places such as isolated wilderness areas (where protection is simply a product of remoteness), watershed protection, military reserves and security zones, fisheries control areas, and even, more controversially, areas protected by destructive human activities such as minefields or abandoned oil platforms and shipwrecks (providing protection from seabed trawling).

25. As a broader scope for protected areas has been accepted, conceptions about protected-area governance have also broadened. While sites legally designated and managed by national Governments still form the core of the world’s protected areas system, there are many other models. In many countries, provincial/state and municipal governments also designate and manage protected areas. Other forms of protection include private reserves, voluntary protection schemes, and many traditional practices of indigenous and local communities, including the designation of sacred sites, taboo areas, and seasonal closures. Importantly, current accepted definitions of protected areas also encompass land- and seascapes in which conservation is pursued through sustainable use of natural resources such as timber, medicinal plants, wildlife, and fisheries.

## 2.2 Global protected areas coverage

26. The most comprehensive dataset on protected areas world-wide is managed by the UNEP World Conservation Monitoring Centre (UNEP-WCMC) on behalf of the IUCN World Commission on Protected Areas (WCPA). This tool, the World Database on Protected Areas (WDPA), has recently become the focus of a collaborative development exercise between a consortium of non-governmental

organizations (NGOs) and has greatly benefited from this pooling of data and knowledge. Although this is still work in progress, the WDPA currently holds some 100,000 records of protected areas. The WDPA will be launched into the public domain at the 5<sup>th</sup> IUCN World Congress on Protected Areas (WPC) in September 2003.

27. Based on currently available data, protected areas are thought to encompass nearly 10 per cent of the Earth's surface, with 90 per cent of those areas being on land. Currently the majority of sites are legally-established areas, set aside either specifically for biodiversity conservation, or with biodiversity conservation as a factor in their establishment (alongside other roles such as watershed protection, fisheries management or historical/cultural protection). Such sites are typically designated under national or sub-national (state or provincial) legislation. Although many sites are set aside at finer jurisdictional levels (village, parish, community), it seems likely that some of these are not registered in international (or even national) inventories.

28. In addition to nationally designated sites, there are a large number of sites designated through international agreements, which are discussed below.

29. While a large number protected areas have been designated with biodiversity conservation in mind, many others were not established based on biodiversity objectives. The result is that many reserve systems are biased towards particular subsets of natural features, usually the economically less valuable and often species-poorer habitats, while leaving others inadequately protected<sup>9</sup>. While it is likely that each individual reserve has significant biological value, currently existing reserve networks are often not the best approach for representing the biodiversity of particular regions, and over the last decade, numerous analyses at the national and regional scales have revealed that the coverage of biodiversity in protected areas is woefully inadequate<sup>10</sup>.

### *2.3 IUCN categorization of protected areas by management objective*

30. Individual protected areas serve a broad range of objectives. While it is rare for an individual site to be declared for only one objective, it is equally unusual for a site to serve all the objectives described above. Depending on the particular role perceived for a site, and on the socio-political pressures, legal regime and cultural context of the country or region where it occurs, quite different legal and management regimes may be established to support its protection. Over time, a host of different names or titles have been developed, and there is rarely conformity between countries in the definitions associated with these names.

31. In the WDPA, at the present time there are over 800 terms used to describe national designations. Even this is an underestimate of the variety of management regimes and objectives in place in the sense that there is no equivalence in the legislation between countries. A "national park" in the United Kingdom is utterly different from a "national park" in Chile.

**Box 1****IUCN Protected Areas Management Categories (1994)**

**CATEGORY Ia – Strict Nature Reserve:** Protected area managed mainly for science.

Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.

**CATEGORY Ib – Wilderness Area:** Protected area managed mainly for wilderness protection.

Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

**CATEGORY II – National Park:** Protected area managed mainly for ecosystem protection and recreation.

Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

**CATEGORY III – Natural Monument:** Protected area managed mainly for conservation of specific natural features.

Area containing one or more specific natural or natural/cultural features which are of outstanding or unique value because of their inherent rarity, representative or aesthetic qualities or cultural significance.

**CATEGORY IV – Habitat/Species Management Area:** Protected area managed mainly for conservation through management intervention.

Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.

**CATEGORY V – Protected Landscape/Seascape:** Protected area managed mainly for landscape/seascape conservation and recreation.

Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

**CATEGORY VI – Managed Resource Protected Area:** Protected area managed mainly for the sustainable use of natural ecosystems.

Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

Source: IUCN 1994.

32. Given this diversity of protected-area objectives and management systems, the IUCN management categories serve a critical role in regional and global analyses. They provide a common language and enable the comparison and summary of management objectives for the world's protected areas. They further enable the interpretation of national protected areas definitions and introduce an element of compatibility.

33. Initial attempts to categorize protected areas included a division of protected areas into "national parks" and "equivalent reserves"<sup>11</sup>. In 1978 IUCN developed a more comprehensive system of categories for conservation management. This included a group considered of prime importance for nature conservation (categories I-V), a group of secondary importance for nature conservation (VI-VIII) and categories established under international designations (IX, X)<sup>12</sup>

34. The IUCN classification scheme was revised in 1994<sup>13</sup>. Among other changes, the revised system recognizes that UNESCO Man and Biosphere Reserves and World Heritage Sites (Categories XI and X under the 1978 IUCN scheme) – and other such internationally-designated sites – are, in almost all cases, covered under relevant national legislation and hence already classified under one or more other IUCN management categories. It is important to note that the current system is based on management objectives, not on relative importance of different areas. The current IUCN classification scheme is given in box 1.

35. Of the 100,000 protected areas held on the WDP, nearly 70 percent have an assigned IUCN management category, and all categories appear to be relatively well represented (See Table 1).

36. The IUCN categorization system is widely accepted, and has been very useful in both obtaining information in a more standardized manner and providing guidance to countries as they establish and expand their protected areas systems. The system nevertheless has a number of shortcomings relating to both its applicability on the ground, and its accuracy as it has been applied in various regional and international overviews. Some sites are very difficult to place in single categories, particularly where sites are internally zoned with particular zones fitting different categories. In other cases, the legislation or details appear to fall between two categories.

*Table 1*

*Global Summary of Protected Areas by IUCN Management Category\**

Categories	Ia	Ib	II	III	IV	V	VI	Total
No. of Protected Areas	5,020	863	3,684	16,127	29,308	10,499	3,039	68,540
Area (km <sup>2</sup> )	1,037,718	920,739	4,123,763	245,951	3,104,831	1,132,036	4,219,472	14,784,510
% Global Land Surface Area	0.70	0.62	2.77	0.17	2.09	0.76	2.84	9.95

\* The figures for percentage of global land surface area are approximate as marine areas are included in the protected areas statistics. In reality these are very small and it is estimated that the total figure remains at over 9 percent with these areas excluded.

Source: World Database of Protected Areas, UNEP-WCMC, March 2003

37. Another common problem comes where classification is undertaken by parties remote from the sites, especially where there is insufficient information to accurately determine the category. The reverse problem has also been observed where, either intentionally or accidentally, an authority may choose to categorize sites quite differently from the situation on the ground.

38. Finally, sites are often placed in management categories based on their hypothetical management status, often based on a site's formal legal designation rather than the actual situation of the site's resources and management regime on the ground. This problem has given rise to calls for addition of a complementary dimension of classification, based on management effectiveness.

39. A project, "Speaking a Common Language", is underway to examine these issues of protected area categorization, including Cardiff University (UK), IUCN, WCPA and UNEP-WCMC<sup>14</sup>.

#### *2.4 International protected areas designations*

40. Paralleling the growth of protected areas at the national and local level has been the development of numerous international treaties, conventions and protocols exhorting the designation of protected areas. Some of these have established entirely new categories of protected areas and require signatories to designate sites for protection. Annex II provides a summary of these agreements.

41. The legal strength of such international agreements varies, both in the technical form of the wording and in the degree of application. A number of these treaties speak of protected areas only in general terms and it would be difficult or impossible to charge a signatory for failing to establish or protect designated areas. A significant number, however, have influenced the designation of new protected areas, whilst others add layers of legal protection onto existing sites.

42. Where international designations are applied, in many cases there is also an element of prestige. This is clearly recognized in the World Heritage Convention sites, but is also the case with Ramsar sites

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and Biosphere Reserves, and in Europe with the Council of Europe Diploma Sites and the forthcoming Landscape Award of the Council of Europe. It is instructive to note that both the Council of Europe designations and Biosphere Reserves are established under non-treaty agreements, and are thus not binding under International Law. Much of their success, therefore, depends on the prestige associated with designation.

43. Enhanced prestige, however, needs to be used to leverage effective conservation. Experience at World Heritage sites indicates that the effective use of the prestige deriving from World Heritage status for conservation action depends on stakeholders – i.e. the State Party, conservation NGOs, protected areas management agencies, scientists and concerned citizens – proactively using that prestige to raise international, national and local awareness and mobilize human and financial resources for effective site management.

44. As noted above, the 1978 IUCN classification scheme placed Biosphere Reserves and World Heritage Sites in categories of their own. It has been recognized, however, that the great majority of internationally-designated sites coincide with one or more existing national sites. The application of management categories to internationally-designated sites is thus most appropriately done by looking at the individual sites and at the national regulations associated with them.

## **B. Values of protected areas**

### *2.5 Difficulties in quantifying the values of protected areas*

45. The statistics in the WDPA (table 1) suggest that over 9 per cent of the world's terrestrial surface falls within protected areas. Protected areas can thus be regarded as one of the most significant forms of land management and use, globally, at the start of the third millennium. Attempts to place a value on protected areas and the ecosystems they encompass therefore invariably expand to consider many of the activities associated with human existence.

46. Protected areas provide us with food, water and many other resources. They regulate our weather patterns. Genetic diversity provides us with medicines, and precious crop varieties. Solace and recreation within protected areas are among the mainstays of tourism, one of the world's largest industries. They generate income, foreign exchange earnings and employment<sup>15</sup>. This holistic approach, looking at ecosystem "goods and services" has underpinned a number of recent reviews of ecosystems, including the recent World Resources 2000-2001 report and associated Pilot Analysis of Global Ecosystems (PAGE) reports<sup>16</sup>, and also forms the basis for the "Integrated Ecosystem Assessment" which underpins the Millennium Ecosystem Assessment<sup>17</sup>.

47. Some efforts have been made to assess the total value of ecosystem goods and services to humanity. One 1997 study estimated the annual value of ecosystems services from the entire biosphere at \$33 trillion, noting that most of this value is outside the market<sup>18</sup>, although this conclusion has been rather controversial<sup>19</sup>. Many of the same authors published another study in 2002 arguing that while this figure may be somewhat imprecise, extensive data supports the conclusion that the economic benefits of natural habitats greatly exceed the benefits of habitat conversion, and that "the overall benefit/cost ratio of an effective global program for the conservation of remaining wild nature is at least 100:1"<sup>20</sup>.

48. Quantitative analysis of the value of protected areas is increasingly employed to justify and support the development and strengthening of protected areas networks<sup>21</sup>. Information on values to different user groups, and of the driving forces behind these values, is also important for enabling better management, ameliorating threats, and resolving conflicts.

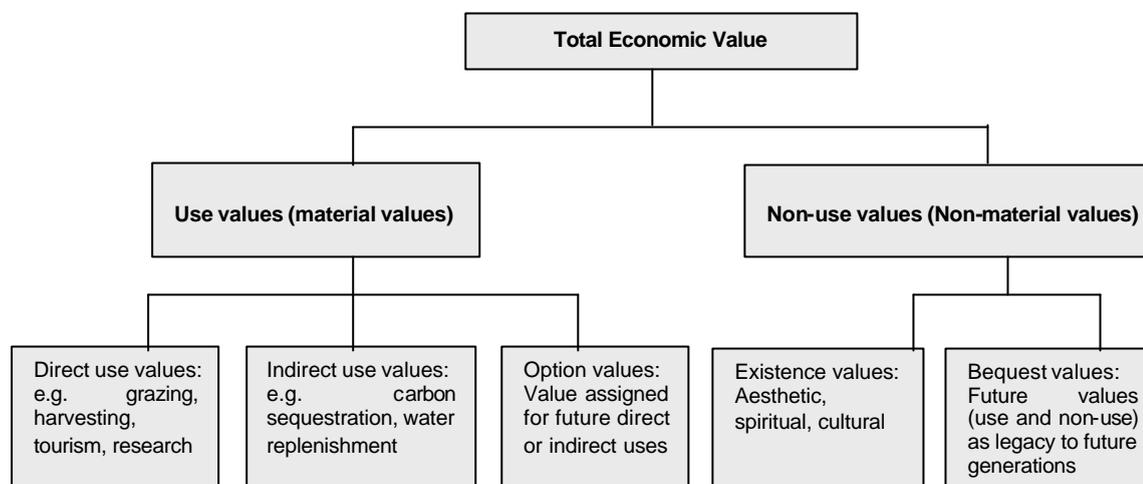
49. The most powerful arguments in many circles are economic arguments. However, it is quite widely accepted that, at present, "ecosystem services are not fully 'captured' in commercial markets or adequately quantified in terms comparable with economic services and manufactured capital, they are often given too little weight in policy decisions"<sup>22</sup>. Efforts to initiate "natural resource accounting" – taking into account the use and depletion of natural resources in the calculation of national income accounts – have moved from the fringes towards the mainstream of economic theory<sup>23</sup>. This is

particularly the case following the growing acceptance of the need for “sustainable development,” as elaborated by the 1992 UNCED conference, the 2002 Johannesburg summit, and environmental treaties such as the CBD. In practice, however, neither the values of ecosystems, nor the costs of their degradation, are systematically integrated into the economic calculations of governments or the private sector.

50. Countering this movement to mainstream “ecological economics”, there is also increasing concern that overly-simplistic economic models may leave out critical elements, including some important societal values (employment, food provision, climatic stability) and non-material or spiritual benefits. The concept of Total Economic Value (TEV) has been widely used to attempt to convert all values and benefits into simple economic terms. Figure 1 shows the main categories of values and benefits which contribute to TEV. Many values are notoriously difficult to evaluate in economic terms, however, and results remain somewhat subjective.

51. Finally, the time frame in which protected area values are evaluated is important to consider, especially because protected areas will more likely “lose out” compared to other land use options if only short-term values are considered. However, as a range of values (both use and non-use) are considered over longer time frames, protected area values will tend to increase as compared to other possible land use options.

**Figure 1**  
*The Constituent Elements of Total Economic Value (TEV)*



Source: Adapted from IUCN (1998)

### 2.6 *Material values and benefits of protected areas*

52. Although typically expressed in economic terms, it is important to consider other approaches to valuation. Differences in available wealth to particular communities, and differences in overall wealth between countries, mean that the use of simple “dollar values” can be extremely misleading. Protected areas may be the only source of employment in an area, or may provide a critical source of timber, or of animal protein in local diets. Converted to dollar values on open markets such measurements may appear trivial in economic terms, but their loss could be devastating to large numbers of people. Some examples of the material benefits of protected areas are given in Box 2.

#### *Direct use values and benefits*

53. Recreation and tourism: Sometimes simply expressed as the receipts in terms of park fees, it is important to calculate the total input of tourists into regional economies, including travel and accommodation costs, and other expenditure. This can also be viewed in terms of employment of local populations. Such economic values are a critical element, but the attractions of protected areas for many visitors are often, in fact, their non-material values<sup>24</sup>.

54. Harvesting of renewable resources: Depending on the management objectives for a particular site, it is often entirely legitimate to allow certain levels of sustainable extraction of natural resources from protected areas. Activities may include: grazing of livestock, fishing, hunting, the use of non-timber forest products, agriculture, water extraction and even the extraction of genetic resources. These values are of particular importance for many local and indigenous communities, especially in developing countries.

**Box 2**

*Some examples of material benefits from protected areas*

- Canada is expected to generate \$C 6.5 billion dollars in annual gross domestic product from the expenditure of participants in wildlife-related activities; this sustains 159,000 jobs and creates \$C2.5 billion in tax revenue each year.
- Australia receives over \$A2 billion in expenditure from eight national parks - at a direct cost to Governments of some \$A60 million.
- In Costa Rica, about \$US12 million is spent annually to maintain the national parks but foreign exchange generated in 1991 was more than \$US330 million with 500,000 overseas visitors (currently 1 million); park-generated tourism is the second largest industry in the country.
- In Tanzania, poaching and uncontrolled hunting of elephants to the south-east of Tarangire National Park led to an increase in woody plants within the park, causing in turn an increase in tsetse flies and hence livestock losses; conservation of elephants would have enhanced the productivity of the livestock industry.
- Zaire (now Democratic Republic of Congo) receives 75% of animal protein from wild sources; 40% of the diet in Botswana comes from animal protein produced by wild sources;
- firewood and dung provide 90% of the energy needs in Tanzania, Nepal and Malawi, and exceed 80% in other countries
- In Italy, the Abruzzo National Park has been so popular that it has regenerated the economy of a poor area that previously suffered from severe depopulation.

Source: IUCN, 1998

55. Extraction of non-renewable resources: Certain extractive activities are non-sustainable, notably the extraction of petroleum products and minerals. In general this would appear to be contrary to the concept of “protection and maintenance” associated with the definition of protected areas. There may be cases, however, where the extraction process has limited impacts and the material being extracted may be non-essential to the objectives and functioning of the protected area. In such situations some argue that economic benefits (direct payments) for the extraction process may justify this activity. IUCN’s view, however, is that extractive activities should not be permitted in areas classified as IUCN protected area categories 1 (strict nature reserves and wilderness areas) and 2 (national parks).

56. Education and research: Protected areas offer some of the best opportunities to understand and explain natural ecosystem processes. They also offer a natural baseline against which to measure environmental change.

*Indirect use values and benefits*

57. Climate influences: Many protected areas play a role in maintaining micro-climatic or climatic stability, including rainfall patterns. Protected areas are also being widely cited as playing a critical role in mitigating the impacts of climate change, acting as carbon reservoirs or sinks.

58. Water services: In addition to climatic influences, protected areas are widely used as a form of watershed protection, guaranteeing the supply of water to adjacent populations. Many wetland areas and other natural ecosystems have been observed to play a role in water purification. The presence of natural vegetation, notably forests and wetlands also reduces extremes of water flow and hence plays a role in flood control.

59. Physical processes: Certain habitats such as saltmarshes, mangroves and coral reefs are widely cited for their role in coastal protection. In terrestrial areas the presence of protected areas, even

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relatively small areas along waterways or in strips along hillsides, has an important role in reducing soil erosion.

60. Wider ecological influences: Spillover of animals from protected areas into adjoining land and water can support adjacent extractive uses. This is particularly the case in marine environments, where even relatively small marine protected areas have been shown to increase the abundance of fish and other marine life in adjacent fishing grounds<sup>25</sup>. Some protected areas also help sustain high levels of natural pollination, avoiding the costs associated with commercially provided pollination

#### *Option values*

61. Future direct and indirect uses, including all of those listed above, are considered “option values”. By maintaining protected areas and their ecological functions, we preserve the option of enjoying the benefits that they produce into the future.

62. Genetic resources: One of the most widely cited option values is the role of protected areas as in situ reservoirs of genetic material in the form of wild crop progenitors, raw material for development of new medicines, and the like. Although impossible to calculate, it is likely that such a role, when the global system protected areas is considered as a whole, could be critically important for the maintenance of future food resources or the development of future treatments for illness<sup>26</sup>.

63. Refugia and adaptation: With growing concerns about climate change – as well as the more immediate impacts of pollution spills and other environmental disasters – the potential importance of protected areas as refugia for future restoration and recovery of adjacent areas is being increasingly realized<sup>27</sup>. In addition, well designed protected area systems (especially those that cover altitudinal and other ecological gradients) may allow certain species to persist by migrating to new areas as climate change occurs and they are forced to adapt.

#### *2.7 Non-material values and benefits of protected areas<sup>28</sup>*

64. While, in some cases, economic figures have been derived for values such as beauty, cultural importance, or even spiritual roles, such values are crude proxies. Some would argue that that placing monetary value on some of these is inappropriate. Principal non-material values include:

65. Aesthetic: Incorporating notions of beauty, inspiration, excitement and adventure.

66. Spiritual/ritual: Perhaps the oldest protected areas of all are holy sites such as the sacred forests of India. In many indigenous cultures as well as in the holy scriptures of all the major world religions respect for nature is implicit or explicit and, as natural areas are diminished and species are driven towards extinction there is an increasing call from religious groups to protect nature.

67. Cultural/heritage: Certain elements of the natural or semi-natural landscape are of considerable cultural value for historic or more recent reasons. Many indigenous peoples place special cultural significance on particular sites and species<sup>29</sup>.

68. Intrinsic: It is argued by some that values may exist independent of human perceptions and unrelated to the human view. Such values are, but their nature, un-measurable.

69. Intergenerational: One definition of sustainability is based on the idea of ensuring an equal or better quality of life for future generations. Protected areas will help ensure this quality of life.

70. In summary, the fact that protected areas have a variety of values is not often disputed. The problem is that these values are often not realizable in conventional economic terms, and are also often received by those who do not bear the current real costs, including opportunities foregone, because they are distant from the protected area in space (e.g. urban dwellers) or in time (e.g. future generations). Old growth forests, for example, help maintain climate regimes, provide clean water for downstream users, and conserve biodiversity, but none of these values turn into cash for local people, while felling the forest may.

### C. *Threats to Protected Areas*

71. While a significant portion of the earth's land area and some marine habitats are formally under some form of protection, the ecological viability of many protected areas is under threat, and some have already been significantly degraded. Many parts of the world, however, protected areas are so little studied or monitored that it is virtually impossible to get a detailed picture of the level and types of threat. A 1999 survey of threats to forest protected areas by IUCN concluded that "considerably less than 10 percent of protected areas has been subject to any kind of analysis of threat, and far less have been subject to detailed assessment"<sup>30</sup>.

72. What information there is paints an ominous picture. The IUCN survey, conducted in 10 key forest countries<sup>31</sup>, found threat levels to be high, and identified two key issues:

73. **Management:** Less than 25 percent of forest protected areas were considered to be well managed with a good infrastructure, and 17 to 69 percent of forest protected areas in these countries had no management at all.

74. **Security:** Only 1 percent of forest protected areas were regarded as secure in the long term. A further 1 percent had been so badly degraded that they had lost the values for which protection was given. Some 22 percent were suffering various levels of degradation and 60 percent were currently safe but faced possible future threats.

75. Another review of threats to tropical rainforest protected areas concluded that in the tropical forest realm, "protected nature reserves are in a state of crisis. A number of tropical parks have already been degraded almost beyond redemption; others face severe threats of many kinds with little capacity to resist. The final bulwark erected to shield tropical nature from extinction is collapsing"<sup>32</sup>.

76. Even less is known about the threats to marine protected areas. A recent survey of 342 MPAs in Southeast Asia (the center of global marine biodiversity) concluded that only 14 percent were effectively managed. The same study also concluded that "human activities now threaten an estimated 88 percent of Southeast Asia's coral reefs....For 50 percent of these reefs, the level of threat is 'high' or 'very high'"<sup>33</sup>.

77. Threats to protected areas are of course not confined to developing countries or to the tropics. Loss of old-growth forest in Europe and North America, for example, has been near complete in most areas except the boreal north, and remaining forest fragments within protected areas are under threat from air pollution, acid rain, overuse of national parks, and other threats.

78. Threats to protected areas can be divided into direct threats which directly stress the biological components of the protected area, indirect threats which drive the direct threats, and underlying causes which comprise broad socio-economic forces often far from the site. Encroachment by small farmers, for example, may pose a direct threat to a protected area. This encroachment may be driven, however, by an indirect cause – the rapid privatization and concentration of agricultural land in adjacent areas. The underlying cause for this situation, in turn, may be subsidies or other changes in government policy aimed at boosting export agriculture to help pay off debts to international financial institutions.

79. The Nature Conservancy (TNC), for example, analyzes threats to protected areas by differentiating between stresses and sources of stress at the site level. A stress is "the impairment or degradation of the size, condition and landscape context of a conservation target, and results in reduced viability of the target. A source of stress is an extraneous factor, either human (e.g. policies, land uses) or biological (e.g. non-native species), that infringes upon a conservation target in a way that results in stress"<sup>34</sup>.

80. Other analyses urge a broader, even global view of underlying causes. A recent research initiative on "the root causes of biodiversity loss" stressed that "biodiversity loss will continue unabated until its indirect or root causes are understood and addressed..." and urged a focus on "the basic conflict that exists between the promotion of growth and consumption on one side, and activities promoting sustainable development and conservation of biological diversity on the other"<sup>35</sup>. The WCPA report National System Planning for Protected Areas notes that "The major threats to conservation in most

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countries lie outside the protected area system. Unless the linkages between protected areas management and external factors are identified and addressed, fundamental conservation issues are difficult to resolve”<sup>36</sup>.

81. Direct threats to protected areas can be classified into four main categories:

- Individual elements removed from the protected area without alteration to the overall structure (e.g. plant, animal or marine species);
- Overall impoverishment of the ecology of the protected area (e.g. through encroachment, grazing, air pollution damage, persistent poaching and illegal logging);
- Major conversion and degradation (e.g. through removal of vegetative cover, construction of roads and settlements, or mining); and
- Isolation (e.g. through major conversion of adjacent lands)<sup>37</sup>.

82. Indirect threats to protected areas vary from place to place, but often include:

- Inappropriate land allocation and land use decisions;
- Unclear legal status of lands and waters and resulting conflicts;
- Weak and inconsistent enforcement of laws and regulations;
- Policies that create excess capacity for natural resource-based industries;
- Rural poverty and landlessness; and
- Revenue needs of central or local governments.

83. The underlying causes of the threats to protected areas are difficult to separate from the underlying causes of biodiversity loss generally. These were defined by the 1992 Global Biodiversity Strategy as:

- The unsustainably high rate of human population growth and natural resource consumption;
- The steadily narrowing spectrum of traded products from agriculture, forestry and fisheries;
- Economic systems and policies that fail to value the environment and its resources;
- Inequity in the ownership, management and flow of benefits from both the use and conservation of biological resources;
- Deficiencies in knowledge and its application; and
- Legal and institutional systems that promote unsustainable exploitation<sup>38</sup>.

84. Another recent study, based on extensive analysis of cases from around the world<sup>39</sup>, identified “three, broad interrelated reasons why the planet is continuing to lose natural ecosystems despite their overall benefits to society”:

“First, there are often failures of information. For many services, there is a lack of valuations of their provision by natural systems, and particularly of changes in this provision as human impacts increase....Second, these findings highlight the fundamental role of market failures in driving habitat loss. In most of the cases we studied, the major benefits associated with retaining systems more or less intact are nonmarketed externalities, accruing to society at local and global scales. Conversion generally makes narrow economic sense, because such external benefits (or related external costs....) have very little impact on those standing to gain immediate private benefits from land-use change....Third, the private benefits of conversion are often exaggerated by intervention failures [such new private benefits arising from tax incentives and subsidies.]”

85. Threats to protected areas, at all these levels of scale and analysis, rarely come singly. Any given protected area that is under threat is likely to be facing a whole range of threats. The previously quoted study of rainforest protected areas found, for example, that most protected areas faced an average of at least three direct threats<sup>40</sup>.

86. Beyond these external threats, protected areas are also threatened by the lack of resources and capacity in the agencies responsible for their management. “Lack of capacity” encompasses a variety of problems, including:

- Lack of financial resources;
- Lack of staff and staff training;
- Inadequate institutional capacity and infrastructure;
- Lack of information about the biology of the area;
- Lack of political/legislative support and/or unclear or contradictory legislation;
- Lack of local community involvement and participation;
- Lack of coordination among management agencies;
- A poor legal framework and lack of adequate enforcement tools;
- Absence of comprehensive land-use plans or management plans;
- Poor definition of protected areas boundaries;
- Lack of agreements about resource use adjacent to or within protected areas; and
- Rapid turnover of protected area staff<sup>41</sup>.

87. The many threats to protected areas – and the severe degradation that some are undoubtedly experiencing – have led some to question whether protected areas are, indeed, an effective tool for biodiversity conservation. At least one recent study strongly disputes this view, concluding that “the majority of parks are successful at stopping land clearing and to a lesser degree effective at mitigating logging, hunting, fire, and grazing”. The study assessed the impacts of these five anthropogenic threats on 93 protected areas in 2 tropical countries, comparing impacts inside the parks with those on a 10 km belt surrounding each park, and concluded that:

...the claim that the majority of parks in tropical countries are ‘paper parks’ – i.e. parks in name only – is not substantiated. Tropical parks have been surprisingly effective at protecting the ecosystems and species within their borders in the context of chronic under-funding and significant land-use pressure. They have been especially effective in preventing land clearing, arguably the most serious threat to biodiversity<sup>42</sup>.

### **III. PLANNING, ESTABLISHING AND MANAGING PROTECTED AREAS AND PROTECTED AREA NETWORKS**

#### ***A. Prioritizing and planning protected areas networks and sites***

##### *3.1 The evolution of biodiversity conservation targets and approaches*

88. Historically, protected areas have been established on an ad hoc, basis, to conserve sites of particular scenic beauty, or to protect the habitats of high-profile species such as tigers and pandas. Over time, the targets of conservation activity have evolved, and notions of protected areas planning have changed accordingly.

89. Redford et al.<sup>43</sup> trace the history of conservation targets (“objects of conservation activity”), noting that conservation in the western world began with a focus on species, first to protect useful species from over-harvesting and later to conserve species as objects worth protecting for their own intrinsic

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value. Later, ecosystems (such as tropical rainforests and coral reefs) became a conservation target, based on recognition of both the importance of ecosystem conservation for protecting species and the value of “ecosystem services” such as water and soil stability. Over the past few decades, “biodiversity” has been identified and widely adopted as a conservation target, most prominently through the forum provided by the CBD.

90. Most recently, a new perspective on conservation targets has focused on “landscapes” (and seascapes), bringing with it a stronger focus on the human element in conservation:

The landscape approach often includes a philosophical approach that sees human activities as integral to, not separate from, the environment. This philosophy is exemplified in bioregional approaches to conservation that treat human beings as necessary components within biocultural landscapes<sup>44</sup>.

91. The landscape approach also stresses the importance of incorporating “connectivity” into conservation efforts, including the use of “corridors” and other habitat configurations that enhance connectivity<sup>45</sup>.

92. This perspective has been taken up and endorsed by the CBD as the “ecosystem approach.” COP Decision V/6 defines the ecosystem approach as:

“...a strategy for the integrated management of land, water and living resources that promoted conservation and sustainable use in an equitable way....An ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems.

93. Decision V/6 makes it clear that the ecosystem approach does not displace other conservation approaches – such as protected areas. Indeed, protected areas are a central component of the ecosystem approach:

The ecosystem approach does not preclude other management and conservation approaches, such as biosphere reserves, protected areas, and single-species conservation programmes, as well as other approaches carried out under existing national policy and legislative frameworks, but could, rather, integrate all these approaches and other methodologies to deal with complex situations.

94. As a result of the widespread adoption of the ecosystem approach – at least at the level of scientific and conservation policy debate – and the need to balance the CBD objectives of conservation, sustainable use, and equitable sharing of benefits, reconciling tensions between biodiversity conservation targets and the use of biodiversity’s components has emerged as a key challenge for protected areas policy and practice. As Redford and Richter point out, “...biodiversity in its entirety can be conserved only in areas of limited human use. But the majority of both the terrestrial and aquatic world have been, and will continue to be, vital sources of resources for the human population. We live in a world of use”<sup>46</sup>.

95. IUCN Protected Areas Categories V and VI specifically provide for sustainable use of biological resources in protected areas<sup>47</sup>, and the issue is ubiquitous in areas directly adjacent to all protected areas, where numerous “integrated conservation and development projects” have been implemented in many parts of the world<sup>48</sup>.

96. Within the CBD process, a series of regional Sustainable Use Expert Workshops has been held in 2001-2003, to develop “practical principles and operational guidelines for the sustainable use of biological diversity”<sup>49</sup>. These principles and guidelines will be considered by the ninth meeting of SBSTTA.

97. As these perspectives have built on one another – and as international conservation organizations have grown in influence and technical sophistication – an increasingly complex variety of approaches have been put forward to setting protected areas priorities, developing protected areas systems, and planning and establishing particular protected area sites. The most exhaustively documented and published methods are generally those developed or championed by international conservation

organizations and, in some cases, development aid donor organizations. For this reason, the review of methods and approaches presented below is biased towards analysis of the work of these organizations.

98. It is important to remember, however, that national and regional efforts to establish protected areas systems and sites predate the more visible approaches championed by the international conservation community. In Latin America, for example, the first national parks were established in Chile in 1926, in Argentina in 1934, and in Colombia in 1948. Nor is the idea of a biologically representative protected areas system a new import to Latin America. The 1970 Quito “Declaration of Principles on Policy for National Parks,” developed under the auspices of the FAO Latin American Forestry Commission, states, for example, that:

Through a review of a nation’s ecological systems....it is recommended that at least one sample of each ecosystem and outstanding area be set aside for management [as a protected area]....The system should embrace the diversity of natural features in the country....[the size of protected areas] must be sufficiently extensive to include complete natural ecological units....Park management planning requires that adequate consideration be given to the sociological, ecological and economic aspects of the area on a multi-disciplinary basis<sup>50</sup>.

99. It is thus important to recall, in reviewing the “new” international approaches discussed below, that the planning and management of protected areas systems and sites, based on scientific as well as economic considerations, has a long history in many parts of the world. Indeed, one of the tasks that the CBD process may wish to take up is the better documentation of national approaches to protected areas system and site planning and management. Much more information on this topic should emerge from the National Reports on protected areas to the CBD (due by May 31, 2003), and the proceedings at the 5<sup>th</sup> IUCN World Congress on Protected Areas (September 2003).

### 3.2 *Approaches to setting biodiversity conservation priorities*

100. Governments, donors, and conservation organizations recognize that financial resources (and political support) for establishing and managing protected areas are limited, and priorities therefore need to be set in a systematic, scientifically valid and transparent manner. To that end, a number of priority-setting methods have been proposed and implemented over the past decade or more. The scope of these methods varies, from broad-brush global approaches to detailed national and even local approaches.

101. Typically, priorities are expressed geographically – where should conservation efforts and investments focus? Geographic priorities vary considerably, however, depending on the criteria used in arriving at them. The most common biological criteria include richness (the number of species or ecosystems in a given area), rarity, degree of endemism, threat, distinctiveness (how much a species differs from its nearest relative), representativeness (how closely an area represents a defined ecosystem) and function (the degree to which a species or ecosystem affects the ability of other species or ecosystems to persist). Additional non-biological criteria include utility (biodiversity elements of known or potential use to humankind) and feasibility (political, economic, institutional or logistical factors that will influence conservation success)<sup>51</sup>. Other factors frequently considered include priorities for: (i) addressing biodiversity threats (e.g., invasive alien species, climate change); (ii) intervention approaches (e.g., alternative livelihood programs); (iii) agreed targets (e.g., to significantly reduce biodiversity loss by 2010); and (iv) areas requiring international cooperation (e.g., monitoring methods, transboundary protected areas).

102. These criteria can be applied at global, regional or national levels, depending on the scope and objective of the institution applying them. International conservation organizations and donors have been most active at applying such priorities at the global level, but have also assisted countries in setting priorities at the national level. As one moves from the global to the national level, of course, the practicalities of competing demands on lands and financial resources become determinative factors. Scientific criteria and concerns may be a necessary starting point for setting protected areas priorities, but they are rarely the ending point on the ground, particularly in developing countries.

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103. At the global level, the most well-known approach is the “hotspots”, “megadiversity countries” and “major wilderness areas” framework developed by Conservation International (CI). CI argues that:

Because biodiversity is by no means evenly distributed, some areas are far richer than others in overall diversity and endemism. Furthermore, many of the richest areas also happen to be under the most severe threat. Over the next few decades, focusing conservation efforts on areas with the greatest concentrations of biodiversity and the highest likelihood of losing significant portions of that biodiversity will achieve maximum impact for conservation investment<sup>52</sup>.

104. The “hotspot” approach utilizes two criteria, endemism and threat, prioritizing those areas where both endemism and threat levels are high – each hotspot has at least 1,500 endemic plant species and has lost at least 70% of its natural habitat. CI has identified 25 such hotspots which in combination hold the entire ranges of 44 percent of the world’s plants and 35 percent of terrestrial vertebrates in just 1.4 percent of the planet’s land area<sup>53</sup>. CI has also applied a parallel approach to coral reefs, and concluded that the 10 richest centers of reef species endemism cover only 15.8 percent of the world’s coral reefs, but include approximately half of restricted-range reef species<sup>54</sup>.

105. Like the hotspot approach, the “major wilderness area” approach prioritizes high-biodiversity tropical ecosystems, but focuses on those areas still harboring “pristine” wilderness, where more than 75 percent of original pristine vegetation remains and population densities are less than 5 per km<sup>2</sup>. Twenty-four wilderness areas have been identified following these criteria.

106. The “megadiversity country” approach is, in CI’s words, “a country-based method intended mainly to better market biodiversity conservation in the world’s top 17 countries for species diversity and endemism”<sup>55</sup>.

107. Another global approach to setting conservation priorities, WWF’s “Global 200”, focuses more on representativeness than on absolute levels of species richness and diversity, and attempts to achieve representation of all major habitat types. WWF argues that:

Conservationists have justifiably focused on the preservation of moist tropical forests (rain forests) because they harbor an estimated 50 percent of species on Earth. However, a comprehensive strategy for conserving global biodiversity should strive to save the other 50 percent of the species and the distinctive ecosystems that support them. Tropical dry forests, tundra, temperate grasslands, lakes, polar seas, and mangroves all contain unique expressions of biodiversity....Some of these major habitat types....are on average more threatened than are tropical moist forests and require immediate conservation action<sup>56</sup>.

108. The Global 200 uses “ecoregions” as the unit of analysis, defined as “a relatively large unit of land or water containing a characteristic set of natural communities that share a large majority of their species, dynamics, and environmental conditions.” These ecoregions are stratified by realm, major habitat type, and biogeographic realm. Criteria for selection of priority ecoregions include species richness, endemism, higher taxonomic uniqueness (e.g. unique genera or families, relict species of communities, primitive lineages), unusual ecological or evolutionary phenomena, and global rarity of the major habitat type. These are applied, however, within each major habitat type and across biogeographic realms, to ensure representativeness.

109. Other global priority-setting methods focus on particular ecosystems or sites of particular international importance to governments. The Ramsar Convention on Wetlands, for example, has established criteria for identifying wetlands of international importance. Under this system, priority wetlands include those that are a “representative, rare or unique example of a natural or near-natural wetland type,” or which have particular significance for the conservation of endangered species, threatened ecological communities, important populations of plants and animals, or protect species at critical stages in their life cycles. In addition, there are specific criteria based on wetlands’ importance for waterbirds and fish. Currently, 1267 wetland sites in the Convention’s 136 Contracting Parties, totaling 107.5 million hectares, have been designated for inclusion in the Ramsar List of Wetlands of International Importance<sup>57</sup>.

110. The Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention), adopted in 1972, aims to engage all nations in protecting those sites that are the most important examples of the world's natural and cultural diversity. State Parties to the Convention are required to identify and delineate areas of cultural and natural heritage within their territory. To this end, "natural heritage" is defined as"

- Natural features consisting of physical and biological formations....which are of outstanding universal value from the aesthetic or scientific point of view;
- Geological and physiographical formations....which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science, or conservation; and/or
- Natural sites or....or natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.

111. Specific criteria are enumerated for inclusion of a site in the Convention's Natural World Heritage List, including such factors as significant natural habitats for in situ conservation of biological diversity, outstanding examples of significant ecological and biological processes, sufficient size, and sufficient integrity in terms of containing all or most of the key interrelated and interdependent elements in their natural relationships. To date 175 States have ratified the Convention, and its 167 natural and mixed (natural and cultural) sites – which include well over 200 protected areas – are distributed amongst 76 countries<sup>58</sup>.

112. UNESCO's Man and the Biosphere Programme, established in 1970, has initiated a global network of protected areas known as "Biosphere Reserves". From the outset, the goal was to identify a global system of designated areas consisting of representative ecosystems providing the broadest possible biogeographical coverage, thereby ensuring more systematic conservation of biodiversity. They are also intended, however, to operate beyond the boundaries and objectives of strict protection, and to incorporate the participation and needs of local communities through sustainable use. Although biosphere reserves are not governed by an international convention, they must serve three mutually-reinforcing functions to be listed:

- A conservation function – to contribute to the conservation of landscapes, ecosystems, species and genetic variation;
- A development function – to foster economic and human development which is socio-culturally and ecologically sustainable; and
- A logistic function – to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

113. Sites are nominated by national committees, and should normally: be representative of a major biogeographic region; contain landscapes, ecosystems, species or varieties that need to be conserved; provide opportunities to demonstrate approaches to sustainable development within the larger regions where they are located; be of an appropriate size to serve the three functions mentioned above; and have an appropriate zoning system, with a legally constitute core area (or areas) devoted to long-term protection, a clearly identified buffer zone (or zones), and an outer transition area. Currently there are more than 400 sites in the network, with approximately 20 sites added annually<sup>59</sup>.

114. The "Frontier Forests" priority-setting system developed by the World Resources Institute (WRI) focuses on identifying and protecting the world's remaining large intact natural forest ecosystems. These forests are "relatively undisturbed and big enough to maintain all of their biodiversity, including viable populations of the wide-ranging species associated with each forest type." Using this set of criteria, WRI determined that almost 70 percent of the Earth's total frontier forest lies within three countries – Brazil, Canada and Russia<sup>60</sup>.

115. The Important Bird Area (IBA) approach developed by Birdlife International utilizes a specific taxon – birds – to establish global conservation priorities. Initial criteria focus on identifying areas important for species of global conservation concern, assemblages of restricted-range species and biome-restricted species, and major congregation sites. Using this method, Birdlife has identified some 7000 IBA sites in 130 countries<sup>61</sup>. The IBA approach has also been used in at the national level, in the Philippines, for example, where an exhaustive study conducted by Birdlife International and the Haribon Foundation (a national conservation NGO) has identified that countries key conservation sites<sup>62</sup>.

116. How do these priority-setting schemes actually affect protected areas decisions on the ground? Ultimately, priorities for establishing and investing in protected areas are set at the national level by governments' conservation and environmental agencies, many of which have been doing so for many decades – although in reality, such agencies must often bow to the priorities of more influential government agencies and powerful business interests, and are also sometimes influenced by the energetic lobbying of international and national conservation organizations.

117. Global priority-setting systems, however, sometimes influence the allocation of financial resources for protected areas which countries, particularly developing countries, can gain access too. The ways that the various international conservation organizations set their own priorities also determines where they work and invest their considerable technical and financial resources. In addition, the international conservation organizations are often influential advisors to the major multilateral, bilateral and private donors that support conservation efforts. Their conclusions on where conservation funding should flow can therefore have very real financial consequences.

### 3.3 *Developing national protected area system plans*

118. CBD Article 8(a) specifically obliges each Contracting Party to “establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity.” As noted above, many countries have chosen and established their protected areas within the context of attempting to develop a representative system of protected areas for some time, and comprehensive technical guidance on how to do so, such as Miller (1980), has been available for several decades. But as the focus of conservation has shifted to situate species- and site-focused initiatives within landscape-scale, ecoregional and ecosystem approaches, even greater emphasis has been placed on development of national protected areas systems plans, and a number of increasingly sophisticated methodologies for doing so have been developed.

119. There currently exists a growing literature on quantitative methods for systematically selecting networks of protected areas based on their complementarity and emphasizing: representativity of biodiversity features (such as species and vegetation types) in the network; the strategic allocation of scarce conservation resources to ensure maximum biodiversity return; and selecting reserves based on how much they complement other existing or planned reserves rather than based on their individual biodiversity value<sup>63</sup>. Such methodologies are increasingly being applied to on-the-ground conservation planning in numerous countries including Australia<sup>64</sup> and South Africa<sup>65</sup>.

120. Justus and Sarkar (2002) give the following rationale for this more systematic approach that emphasizes complementarity of protected areas sites within a system:

Explicit, quantitative procedures for identifying biodiversity priority areas are replacing the often ad hoc procedures used in the past to design networks of reserves to conserve biodiversity. This change facilitates more informed choices by policymakers, and thereby makes possible greater satisfaction of conservation goals with increased efficiency. A key feature of these procedures is the use of the principle of complementarity, which ensures that areas chosen for inclusion in a reserve network complement those already selected.

121. Others have argued, however, that the use of complex quantitative mathematical methodologies of this kind is beyond the capacity of many countries, and that it is a “data-hungry” approach in which the quality of the results are determined by the quality of the data fed into the process. Where data are biological data are sketchy or incomplete, the results may not be valid.

122. A methodologically simpler set of generic protected area system planning guidelines has been developed by IUCN's World Commission on Protected Areas (WCPA). WCPA's best practice guidelines on National System Planning for Protected Areas, state that:

A system plan is the design of a total reserve system covering the full range of ecosystems and communities found in a particular country. The plan should identify the range of purposes of protected areas and help to balance different objectives... [and]...identify the relationships among the system components....It should help demonstrate important linkages with other aspects of economic development.... [and]....should be a means to establish the priorities for workable national system of protected areas.<sup>66</sup>

123. System planning is encouraged by WCPA and others because it (a) ensures representative coverage of a country's biodiversity; (b) provides opportunities to link protected areas planning to consideration of issues in the wider geographic, institutional and economic landscape; and (c) can serve as a tool for considering and setting priorities at the national level. The WCPA recommendations on essential elements for a national protected areas system plan are presented in Box 3.

124. Perhaps the most technically detailed and field-tested methodology for national system planning is the Ecoregional Planning (ERP) methodology developed by The Nature Conservancy (TNC), which is now being applied by a number of governments and NGOs. The ERP Methodology, which requires a collaborative, multi-stakeholder process, goes beyond "coarse-scale" prioritization schemes, and provides "a practical yet science-based planning framework for identifying the priority conservation areas within ecoregions"<sup>67</sup>. In China, for example, the State Environmental Protection Agency (SEPA), in collaboration with TNC and a range of government agencies, is initiating an ERP-based exercise that aims to develop a national system plan of priority protected areas. In addition, a large number of state and federal government agencies in the United States are applying this ERP methodology, and the Government of Chile is considering using it as well.

125. The ERP Methodology uses the ecoregion as the unit of analysis, which it defines as "large areas of the earth's surface that have similarities in faunal and floral composition due to large-scale, predictable patterns of solar radiation and moisture". Within each ecoregion, the methodology encompasses six general steps: (i) collection of information (and identification of information gaps); (ii) identification of conservation targets (e.g., coastal mangrove forests); (iii) establishment of conservation goals; (iv) assessment of existing conservation areas (and identification of gaps in coverage); (v) evaluation of the ability of conservation targets to persist over time (including assessment of critical threats); and (vi) assembly of a portfolio of conservation areas. The methodology is designed to "identify a set of conservation areas that best represents the native species and ecosystems of the region and the underlying ecological processes that sustain them". The primary output of the process is identification of a "portfolio" or network of lands and waters for conserving the elements of biodiversity within an ecoregion<sup>68</sup>. Determining how to best design and manage those conservation areas (i.e. protected areas) requires more detailed site-planning at finer scales, discussed below.

126. TNC's regional planning framework has been utilized for the development of over 45 ecoregional and regional conservation plans in the United States, Latin America, the Caribbean, Micronesia, and China's Yunnan Province. To facilitate the process, TNC has prepared a detailed Practitioner's Handbook to Ecoregional Conservation Planning<sup>69</sup>.

127. Both the WCPA and TNC frameworks for protected areas system planning point out that the process by which a plan is prepared is as important as the ultimate content of the plan. The WCPA guidelines stress that if a plan is to be effective, it must reflect "on-ground needs and priorities, and must be 'owned' by those who will have to implement it..." and notes that "it is desirable to include the participation of the local people who live in and around the parks (or have other traditional or economic links with them) in developing the plan."<sup>70</sup> TNC's framework also emphasizes the importance of broad stakeholder participation.

**Box 3**

*WCPA guidelines on essential elements of a national system plan for protected areas*

- Clear statement of objectives, rationale, categories, definitions, and future directions for protected areas in the country;
- Assessment of conservation status, condition and management viability of the various units;
- Review of how well the system samples the biodiversity and other natural and associated cultural heritage of the country;
- Procedures for selecting and designing additional protected areas so that the system as a whole has better characteristics;
- Identification of the ways in which activities undertaken at national, regional and local levels interact to fulfill national and regional objectives for a system of protected areas;
- A clear basis for integration and coordination of protected areas with other aspects of national planning (e.g. with national biodiversity strategies, but also with land use, economic and social planning.);
- Assessment of the existing institutional framework for protected areas (relationships, linkages and responsibilities) and identification of priorities for capacity building;
- Priorities for further evolution of the protected areas system;
- Procedures for deciding the management category most appropriate to each existing and proposed unit;
- Identification of investment needs and priorities;
- Identification of training and human resource development needs for protected areas management; and
- Guidelines for preparation and implementation of management policies and site-level management plans.

Source: Davey 1998.

*3.4 Protected area site planning and establishment*

128. The planning and establishment of particular protected area sites requires a more finely-focused and detailed process of ecological and socio-economic assessment than does systems planning. In developing a systems plan, planners are merely identifying, across a country or ecoregion, the sites of highest conservation value. Once those areas are identified, plans must be developed for each of them and their legal status needs to be established or clarified. In many cases, key sites will already have been established as protected areas, and the task in such cases is to assess their current condition, boundaries and management status in order to determine whether changes are needed to better serve the objectives of the overall systems plan. Processes for stakeholder participation (discussed in detail below) become extremely important in this process, since the design and legal designation of a particular site can have significant impacts on local people's access to resources and livelihoods.

129. Most countries already have methodologies for protected area site planning written into relevant legislation and regulations. New site planning methodologies may have many logical advantages and may be built on a foundation of the latest conservation science, but they need to integrate – not supplant – existing ways of doing things, if their proponents are to gain the support of protected areas policymakers and planners. Experiences with use of TNC's site planning methodology in Madagascar and Latin America are instructive in this regard.

130. TNC has developed a comprehensive framework and methodology for site conservation planning, called The Five-S Framework for Site Conservation<sup>71</sup>, which is now being applied in many countries in collaboration with government and non-governmental partners. Based on TNC's own site planning

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experience over decades as well as the work of many other organizations, the Framework has strongly influenced the development of other organizations' site-planning methods, including Parks Canada and WWF. General steps in the method include identifying the key targets for conservation at a site, analyzing threats, evaluating capacity, devising management strategies, and establishing systems for monitoring the effectiveness of site management over time (See Box 4.)

131. The Five-S Framework has been widely and effectively used in the United States. But it can be a complex process, requiring considerable technical and financial resources to carry out. Experiences from Madagascar on how it can be adapted for use in developing countries which may not possess high levels of capacity are instructive. In 2000, Madagascar's protected area service (Parcs Nationaux de Madagascar – PNM) carried out an assessment of its national protected area systems plan, using the WCPA system planning guidelines as a model. The national system, it was determined, conformed closely to the WCPA guidelines, and PNM then moved on to adopting a framework for site planning and management. After reviewing available frameworks, PNM decided to model its approach on the Five-S Framework, which it viewed as the most exhaustive, science-based, field-tested system available.

132. While the Framework was at first “highly complex and difficult to grasp” for many participants in the process, it was successfully adapted and used to develop management plans and monitoring systems for the country's protected areas. One key change was modification of the framework's terminology to conform to existing national terms, making the whole system easier to understand and apply. Another important change was the addition of a category for ecological functions (i.e. ecosystem services) as a conservation target. Overall, the exercise not only developed site management plans, but assisted PNM in identifying capacity-building needs for implementing the plans<sup>72</sup>.

133. Receptivity to the Five-S Framework has been more variable in Latin America. While it has been enthusiastically adopted in some countries, resistance to its adoption has arisen in others. The main reason for this resistance is the fact, discussed above, that most countries in the region already have guidelines for the preparation of protected area management plans written into their legislation. It is thus natural that resistance would arise to the promotion of a “new” methodology that is seen as a competitor to established ways of doing things, even if the old methods may no longer be congruent with current conservation science and evolving national conservation goals<sup>73</sup>. It is also important to remember that national governments – unlike conservation organizations – have to balance many competing priorities – such as poverty alleviation and the promotion of agriculture and industry – against conservation objectives.

134. Another framework for site planning has been developed by Birdlife International, and applied in a number of African countries in collaboration with the Global Environment Facility (GEF). Key elements of this framework include: establishing the time frame; determining the institutional focal point, its mandate and expertise; analyzing tenurial and legal status issues; analyzing key threats and developing responses; developing a monitoring system; promotion of the site plan; assessment of available data and data gaps concerning biological and socio-economic information; assessment of financial resources; and integration of the site into wider conservation networks and frameworks<sup>74</sup>. The Birdlife International framework also includes a useful set of lessons learned, which are equally applicable to all site planning exercises (See Box 5).

**Box 4**

*The five-S framework for site conservation planning*

Step	Brief description
SYSTEMS	The first part of the systems step comprises an analysis of conservation priorities based on national, regional and local endemism and diversity. Other criteria could include, for example, critical ecosystem services to local populations. The next part is to identify conservation targets that are ecosystems, habitats, distinct ecological communities or species requiring management, as a consequence of their being identified as high conservation priorities and their current or potential threat status. Usually no more than eight targets are selected. Species targets can be integrated into a larger ecosystem/habitat target. For example, a wetlands habitat such as an estuary may be specifically managed for invertebrate or plant species that are locally endemic to them. The viability or ecological integrity of each target is analysed based on size, condition and landscape context criteria. The integrity assessment identifies important ecological factors that need to be managed in order to reduce critical stresses. The assessment also enables the definition of management goals expressed as monitoring benchmarks.
STRESSES (part of Threats)	Stresses are the negative impacts on conservation targets that result from undesirable or incompatible human activities. All stresses identified for each conservation target are identified and their importance ranked based on (i) severity, and (ii) geographical scope. Examples include habitat loss, pollution and introduction of invasive alien species.
SOURCES of stress (part of Threats)	Sources of stress are analysed for each stress category under each conservation target, and their importance is ranked based on (i) their contribution to stresses, and (ii) irreversibility (how difficult they are to reverse or halt.) Examples include destructive fishing practices, unsustainable commercial-scale logging, and fuelwood collection.
THREATS – (combines sources of stress)	Stresses and sources of stress are combined into a ‘threat.’ Threats can be defined as ‘critical threats’ which are active/anticipated sources of stress, or as ‘persistent stresses’ which are stubborn, negative impacts that are a result of discontinued human activities. The separation of threats into critical and persistent is of considerable interest. Critical or active threats are clearly the highest priority for management as they continue to cause harm to the site. However, persistent stresses may be prioritized under certain conditions: if major critical threats are eventually reduced to acceptable levels, protected area managers may wish to devote resources to restoration of degraded habitats or diminished populations. The two threat categories therefore clarify where management should focus: on the reduction of active threats or the restoration of the environment. The level of threat can be evaluated by conservation target or by site. Examples include habitat fragmentation from swidden agriculture, and marine ecosystem degradation from overfishing.
CAPACITY evaluation	Evaluate capacity of management teams using a range of capacity criteria: leadership and support, adaptive management/ planning experience, financial resource availability, effective partnerships, etc.
STRATEGIES	Strategies are developed based on the analyses outlined above. Strategies are developed to abate specific threats. Their benefits are evaluated in terms of threat reduction/restoration value derived from (i) the threats they are designed to reduce, (ii) feasibility, and (iii) costs. Examples include alternative livelihood programs to combat illegal forest clearing, and agricultural intensification programs to reduce deforestation rates.
Measures of SUCCESS (=Monitoring and Evaluation)	A monitoring system composed of “measures of success” (MOS) (i.e., indicators) is developed to measure three factors: (i) biodiversity health; threat abatement; and (iii) capacity. Biodiversity monitoring may be directly linked to key concerns identified during target viability analysis or be more generalized to provide early warnings of new or as yet undetected threats. Benchmarks to evaluate management success are defined. Ongoing monitoring is tightly linked to clearly defined management goals.

Source: Nicoll 2002.

**Box 5**

*Lessons Learned in the Development of Important Bird Area Site Action Plans*

- Adequate time: Sufficient time should be allocated to planning. This is important to ensure that the planning process is done fairly and adequately in order to address all pertinent issues.
- Stakeholder participation and mobilization is essential at all times. Involvement of stakeholders ensures that the process, plans developed and implementation are “owned” by the stakeholders. Undertaking stakeholder analysis is essential.
- Understanding the socio-economic context is essential in order to sufficiently integrate socio-economic concerns into the plans. Issues of livelihood are important and they must be integrated in the plan if they are to succeed.
- Baseline information and data (ecological, socio-economic, history, management regimes and practices, indigenous knowledge and traditional management systems, geo-physical, etc.) must be collected. Site plans must be based on good information.
- Resources (funds, logistics, and manpower) for undertaking site plans should be identified or earmarked prior to implementation. This helps avoid frustration that will arise if the plan is not implemented due lack of funds.
- Close linkages between site plans and wider conservation strategies are essential so as to keep the plan relevant to priority conservation needs and approaches. Failure to achieve this often leads to plans that are not supported or simply not popular.
- Use of local expertise is important for sustainability and relevance. Local expertise should include both indigenous and scientific experts.
- Land and natural resource tenure (ownership, access and control) are important when determining which conservation options to pursue.
- Awareness is an important tool for bringing stakeholders on board and broadening political support for conservation of the site.

Source: Birdlife International 2001.

*3.5 Stakeholder participation processes*

135. The establishment of protected areas affects the livelihoods and interests of many people, groups and institutions. Without local support, management of a protected area becomes a daily battle against poaching and encroachment. Conversely, where local people support a protected area’s establishment, effective management becomes infinitely easier. In some cases, local people have been the initial proponents of the establishment of protected areas based on the benefits that may be realized. It is thus widely recognized that local consultation and participation are key ingredients for success in protected area planning and design. The need for effective stakeholder participation arises, in fact, at the stage of protected area system planning, when potential protected areas are being identified. As noted above, this process must take socio-economic and local political factors – as well as biological criteria – into account, and this is done most accurately and effectively with participation of key stakeholders. At the level of a national systems plan, such participation is likely to be fairly general and cursory, due to the scope of systems planning exercises.

136. As protected areas planning moves to the site level – and the objective moves from merely identifying areas of importance to planning and designing particular protected areas sites – the need for participatory processes becomes more acute, since these kinds of decisions will often have concrete impacts on people’s lives and livelihoods. The planning, design and legal establishment of protected areas must therefore be carried through a process that allows meaningful participation by all interested

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parties, and meaningfully responds to their concerns. “Consulting” an interested party – but then going ahead to do what you were planning on doing anyway, regardless of opposition – is not an adequate strategy for resolving potential conflicts and eliciting the societal support that a successful protected area requires.

137. This is particular the case in today’s world, where the varieties of protected areas governance and management extend beyond the model where a national government agency administers and manages an area of land or water owned and controlled by the national government. In short, planning and design of protected areas needs to encompass not just what needs to be done where, but must also address who will have the authority and responsibility to do it. To the extent that local or indigenous communities, local government agencies, or the private sector may in fact be the governing authority – or co-governing authorities under a “co-management” scheme – it is imperative that these stakeholders be involved in the initial planning and design of the protected area. The subsequent section reviews protected area governance and management issues, while this section discusses elements and principles for participatory processes in protected area site planning that are useful for all protected areas, no matter what their governance and management regime.

138. The first step in establishing a participatory process is determining who the relevant stakeholders are. “Stakeholders” in protected areas decisions might include: local and indigenous communities; protected area management authorities; other government agencies with natural resource portfolios; local administrative authorities (e.g. district or municipal councils and governments); local businesses and industries (e.g. tourism, water users); scientific research institutions; and non-governmental organizations. Referring to all such interested parties as undifferentiated “stakeholders,” however, implies that all of their concerns and claims may be of equal strength and legitimacy, when this is rarely the case.

139. Borrini-Feyerabend argues that “not all stakeholders are equally interested in conserving a resource nor are they equally entitled to have a role in resource management. For the sake of effectiveness and equity, it is necessary to distinguish among them on the basis of some agreed criteria. Social actors who score high on several accounts may be considered ‘primary’ stakeholders. ‘Secondary’ stakeholders may score high only on one or two”<sup>75</sup>. Possible criteria for distinguishing among stakeholders are presented in Box 6.

**Box 6**

*Possible criteria to distinguish among protected areas stakeholders*

- Existing rights to land or natural resources;
- Continuity of relationship (e.g., residents versus visitors and tourists);
- Unique knowledge and skills for the management of the resources at stake;
- Losses and damage incurred in the management process;
- Historical and cultural relations with the resources at stake;
- Degree of economic and social reliance on such resources;
- Degree of effort and interest in management;
- Equity in the access to the resources and the distribution of benefits from their use;
- Compatibility of the interests and activities of the stakeholder with national conservation and development policies;
- Present or potential impact of the activities of the stakeholder on the resource base.

Source: Borrini-Feyerabend 1996.

140. There is no one right way to facilitate effective stakeholder participation, since countries, cultures, and protected areas vary so greatly across the planet. There are, however, a number of general principles that protected areas planners may wish to take into account:

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- **Providing information:** Participation needs to be informed, and this requires the provision of adequate information to stakeholders in advance of consulting with them. In doing so, planners need to remember that different stakeholders will have different levels of technical expertise and local knowledge. Biologists, for example, may know very little about the socio-economic situation in an area, while local and indigenous communities are likely to have little background in conservation science. In many cases, language may be a barrier, and key materials will need to be presented in appropriate local languages.
- **Empowerment:** Provision of information through written materials and briefings may not be adequate to level the participatory playing field for some local and indigenous communities. One way to do so is through the various forms of “participatory rural appraisal” and community-based mapping that have been utilized in many countries and communities. By catalyzing a process and providing methods by which local communities can themselves analyze the condition and uses of – and threats to – their natural resource base, local capacities to articulate community interests and proposals can be significantly boosted<sup>76</sup>.
- **Representation:** It is not always the case that a person or organization claiming to “represent” a particular stakeholder group is accurately representing the views of that group. This situation can arise, for instance, where NGOs claim to speak for local communities, indigenous leaders claim to speak for their peoples, or private sector industry association representatives claim to speak on behalf of their membership. This can cause problems later on, when, for example, protected areas authorities claim to have “consulted” with a local or indigenous community, but the community does not in fact feel that it was fairly represented in the planning process.
- **Facilitation:** The persons or organization facilitating the consultative process must be perceived as objective and fair. If the convener or facilitator is viewed as biased towards the interests of one or another group, the whole process will likely be dismissed by other stakeholders as “fixed” and therefore illegitimate.
- **Time and Travel Constraints:** Participation is expensive, particularly for local and indigenous communities. Taking time off from work for meetings is not an option for many rural people, unless the process is designed with their particular needs in mind, such as harvest or fishing times, key religious or cultural events, and the difficulty and expense of traveling, particularly in the remote rural areas where many protected areas are located. Local officials of poorly funded protected area agencies and local government units may face similar problems.
- **Feedback and Follow-Up:** Effective participation in protected area planning cannot be conducted as a one-off event, after which planners can tick off the “participation” box on their list and get back to work. Participation needs to be viewed and managed as an ongoing process, in which planners listen to stakeholders’ views and concerns and meaningfully respond to them. Participation is not a matter of holding a meeting; it involves establishing a credible and ongoing process. This is particularly important for situations where engaging the local community in managing the protected area under a “co-management” regime is the ultimate management objective.

### ***B. Protected areas governance and management***

141. Setting priorities and carrying out systematic planning are important steps in establishing effective protected areas networks, but ultimately, the effectiveness of protected areas comes down to questions of governance and management. Who has the authority over the area, what are their responsibilities, and how should they carry them out? As previously noted, the traditional model of a single national protected areas agency managing a park comprising lands or waters owned by the state – albeit still important – is not the only protected areas governance and management system that currently exists. At least six other variations exist (and often overlap) in one form or another around the world:

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- Decentralized governance by provincial/state or local government units;
- Co-management arrangements between governments and local communities;
- Indigenous territories managed for conservation purposes by indigenous communities;
- Community-conserved areas voluntarily established by local and indigenous communities, whether legally recognized by governments or not;
- Protected areas governed by private sector entities (both non-profit and for-profit) under contract or outright private ownership; and
- Transboundary reserves jointly managed by two or more governments.

### *3.6 Decentralized government management*

142. Many countries are undergoing a process of decentralizing authority and responsibility for the management of biodiversity and natural resources to sub-national levels of government such as states, provinces, districts and municipalities<sup>77</sup>. Often this is part of a more general decentralization of governmental powers and responsibilities. Protected areas have long been established and managed to some extent at sub-national and local levels, but this trend is accelerating rapidly, placing new responsibilities on local government units that are sometimes not prepared to carry them out.

143. Decentralization of protected areas governance and management has considerable potential advantages. Local governments may be more sensitive to the local situation and the needs and interests of key stakeholders. Management and enforcement may be more effective when their locus is closer to the ground. Local government officials are likely to be more aware of the local benefits of ecosystem services – such as watershed and coastal protection and soil retention – than are bureaucrats in a distant capital. Boundaries are likely to be set in greater conformity to local resource use. And, where local governments receive the rights to collect protected areas revenues along with the responsibility to manage them, their incentives to support protected areas may increase. Decentralization can also improve the efficiency and effectiveness of protected areas governance and management as some responsibility may be delegated to private entities, civil society organizations, or NGOs that have relevant capacity or expertise.

144. Decentralization can also, however, pose considerable threats to protected areas. National or global conservation values are likely to be much less important to local officials than short-term revenues that may be obtained from logging, fishing and other uses of protected area resources. Financial and human management resources may be severely limited, particularly when a system is in transition from a formerly centralized, top-down model. Lack of coordination among provincial/state governments can result in habitat fragmentation if central governments do not provide a unifying hand. And local government agencies may be less able to resist pressures from both business interests and local communities trying to encroach into protected areas for commercial or subsistence activities.

145. National governments therefore generally need to retain a clear role in setting minimum management standards, ensuring that land allocation decisions are made in line with the ecological characteristics of the area, and providing a venue for appeals by disaffected stakeholders from local decisions and actions they perceive as inequitable or illegal. Thus, national governments must maintain a functional, institutional link between parties responsible for national level policies and those responsible for planning and implementation at the local level.

### *3.7 Collaborative management with local communities (“co-management”)*

146. Co-management can be generally defined as “a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources<sup>78</sup>”. With specific reference to protected areas, it generally refers to:

...a partnership by which various stakeholders agree on sharing among themselves the management functions, rights and responsibilities for a territory or set of resources under protected status. The stakeholders primarily include the agency in charge and various associations of local residents and resource users, but can also involve non-governmental organizations, local administrations, traditional authorities, research institutions, businesses, and others<sup>79</sup>.

147. There is tremendous variation in co-management arrangements, ranging from situations where local communities essentially govern and manage a protected area with government only providing technical advice and support, to situations where most protected area functions are carried out by government, and local communities sit on a management oversight board. There is an extensive literature of analysis and case studies on both terrestrial and marine protected areas co-management<sup>80</sup>, including numerous testimonies to the efficacy of the approach.

148. At the same time, community-based approaches have also been criticized by some conservation professionals, and “to a certain extent, skepticism is justified as, in recent years, there appears to have been far more rhetoric and enthusiasm about community-based conservation than practical and credibly documented examples on the ground”<sup>81</sup>. Worah argues that this is because of an over-reliance on the “Integrated Conservation and Development Project” (ICDP) model, which uses economic incentives to generate local support for protected areas, and has been widely criticized. The ICDP approach is based on the hypothesis that increasing incomes of local people automatically leads to reduced impacts on protected areas, but “in fact, the underlying assumption of such initiatives – that most biodiversity loss is caused through local overuse of natural resources by local communities – is flawed”. While local economic incentives, properly understood and designed, certainly have a role to play, “it is well documented that wherever community involvement in protected area management has worked well, it has been facilitated by enabling policy and legislation, usually at the national level.” Worah thus concludes that it is best to:

...focus on the basic principles of community-based conservation which are to decentralise resource management to the local level, to put the appropriate system of incentives and the policy environment in place to enable this and to build capacity for local stewardship of natural resources. This would imply that the focus of community-based conservation initiatives needs to be on facilitating equitable negotiations between interest groups based on incentives and disincentives, check and balances and a supportive policy environment<sup>82</sup>.

149. A comprehensive study of ICDPs in Indonesia reached similar conclusions, arguing that “Most ICDPs are proceeding as if PAs are failing because of increasing pressure from local people alone. This study suggests that the problems in PAs run much deeper than this and will not be adequately addressed by community-level approaches that are not linked to broader reforms in PA management – if not natural resource management in general”<sup>83</sup>.

150. The well documented problems with many donor-funded ICDP projects, however, should not be taken as a condemnation of co-management approaches per se. Many effective examples of protected areas co-management have been well documented on all continents, and it seems clear that cooperative arrangements between the state and local communities will only grow in importance as a strategy for protected areas governance.

### 3.8 *Indigenous management*

151. CBD Article 8(j) specifically calls on Contracting Parties to “...respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity....” This provision is particularly relevant for protected areas since the subject of CBD Article 8 is in situ conservation, and millions of indigenous people live within protected area boundaries. One review concluded that 86 percent of protected areas in Latin America, 69 percent in India, and 70 percent worldwide are inhabited, and the great majority of these inhabitants are indigenous, with 80 percent of protected areas in South America – and 85 percent in Central America – having indigenous peoples living inside them<sup>84</sup>. CBD Article 10(c) is also important in this regard, since it obliges Parties to “protect and encourage customary

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use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements”.

152. In the past, however, indigenous peoples have often been seen as an impediment to conservation and expelled from their ancestral territories when they were brought under state control and designated as protected areas. This view is summed up in the words of Bernard Grzimek, who campaigned to conserve wildlife on the Serengeti plains by excluding the native Masai herders, arguing that “a national park must remain a primordial wilderness to be effective. No men, not even native ones, should live inside its borders”<sup>85</sup>.

153. This perspective is in complete opposition to the perspectives of many indigenous peoples themselves, who view themselves, their cultures and ways of obtaining their livelihood as inextricably linked to what others may perceive as “wilderness”<sup>86</sup>. As conceptions of protected areas have broadened, and indigenous rights over lands, waters and natural resources have received more political recognition, the views of conservationists and government conservation agencies have begun to move closer to the indigenous view.

154. Specifically, what many indigenous and traditional peoples’ organizations demand is that protected areas established on their domains:

- Effectively protect those domains, as well as the people and cultures they contain, from external threats, and in particular reinforce traditionally protected areas;
- Recognize their rights to their lands, territories, waters, coastal seas and other resources;
- Recognize their rights to control and co-manage these resources within protected areas and allow participation of traditional institutions in co-management arrangements;
- Recognize the rights of indigenous and other traditional peoples to determine their own development priorities, as long as they are compatible with protected areas objectives;
- Be declared only at their initiative, and/or with their free and prior informed consent; and
- Incorporate sustainable use of natural resources using methods that maintain the integrity of the ecosystem and that have been used traditionally by indigenous peoples<sup>87</sup>.

155. A review of 11 cases where protected areas overlap with indigenous or traditional territories, undertaken by WCPA and WWF, reached the following general conclusions:

- Indigenous and other traditional peoples are indeed actively interacting with protected areas around the world.
- Most protected areas reviewed in the case studies were proclaimed without the expressed consent of the people who previously inhabited the region. As a result, protected areas authorities have been making decisions without the full involvement of the key stakeholders.
- The situation is beginning to change, as a result of the greater acceptance of indigenous peoples’ rights and the growing recognition that involvement of indigenous peoples is essential to avoid conflicts and to ensure long-term sustainability of the protected areas in which they live or have an interest.
- In reality, however, the involvement of indigenous and traditional peoples in protected area planning and decision-making processes often falls short of the ideal. One promising way to develop more effective co-management of such areas may be through informal consultation and discussions between government agencies and indigenous peoples’ communities, perhaps facilitated by international organizations<sup>88</sup>.

156. In 1999, WWF and IUCN endorsed a set of principles and guidelines on indigenous and traditional peoples and protected areas (see Box 7), which are a considerable advance on past practice, and provide an important resource for implementing CBD Article 8(j).

**Box 7**

*IUCN/WWF principles on indigenous/traditional peoples and protected areas\**

Principle 1

Indigenous and other traditional peoples have long associations with nature and a deep understanding of it. Often they have made significant contributions to the maintenance of many of the earth's most fragile ecosystems, through their traditional sustainable resources use practices and culture-based respect for nature. Therefore, there should be no inherent conflict between the objectives of protected areas and the existence, within and around their borders, of indigenous and other traditional peoples. Moreover, they should be recognised as rightful, equal partners in the development and implementation of conservation strategies that affect their lands, territories, waters, coastal seas, and other resources, and in particular in the establishment and management of protected areas.

Principle 2

Agreements drawn up between conservation institutions, including protected area management agencies, and indigenous and other traditional peoples for the establishment and management of protected areas affecting their lands, territories, waters, coastal seas and other resources should be based on full respect for the rights of indigenous and other traditional peoples to traditional, sustainable use of their lands, territories, waters, coastal seas and other resources. At the same time, such agreements should be based on the recognition by indigenous and other traditional peoples of their responsibility to conserve biodiversity, ecological integrity and natural resources harboured in those protected areas.

Principle 3

The principles of decentralisation, participation, transparency and accountability should be taken into account in all matters pertaining to the mutual interests of protected areas and indigenous and other traditional peoples.

Principle 4

Indigenous and other traditional peoples should be able to share fully and equitably in the benefits associated with protected areas, with due recognition to the rights of other legitimate stakeholders.

Principle 5

The rights of indigenous and other traditional peoples in connection with protected areas are often an international responsibility, since many of the lands, territories, waters, coastal seas and other resources which they own or otherwise occupy or use cross national boundaries, as indeed do many of the ecosystems in need of protection.

\* These principles are complemented with 22 more detailed guidelines.

Source: Beltran 2000.

157. A recent review of case studies in Africa, however, illustrates that practice on the ground is still far from implementing these principles. Part of an ongoing project of the World Rainforest Movement's Forest Peoples Project, the Africa study reported that:

A shocking conclusion of this project is that the WCPA/WWF/IUCN Principles and Guidelines on Protected Areas and Indigenous/Traditional Peoples are not being followed in any of the ten cases that were examined. Not only are the principles being ignored, but before this project, conservation project managers were largely unaware of the suggested guidelines for enabling the principles to be put into practice, and in most of the cases indigenous peoples' rights to their lands continue to come under increasing pressure from conservation agencies in their areas<sup>89</sup>.

158. It appears, therefore, that while CBD Article 8(j), the IUCN/WWF guidelines, and some examples on the ground are creating opportunities for more productive and equitable relationship between protected areas and indigenous peoples, a great deal more needs to be done to put these ideals and principles into practice.

159. The CBD Secretariat is currently preparing a "Composite Report on the Status and Trends Regarding the Knowledge, Innovations and Practices of Indigenous and Local Communities Relevant to the Conservation and Sustainable Use of Biodiversity", under Terms of Reference provided by the CBD Ad hoc Open Ended Working Group on Article 8(j) at its second meeting. The draft report will be

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presented to the third meeting of the Working Group, and then to the seventh meeting of the COP. It is expected that this report will contain considerable information and guidance directly pertinent to the relationship of indigenous peoples and protected areas.

### *3.9 Community-conserved areas*

160. While government declaration and management – or co-management – of protected areas has been the norm in most countries, there are also significant numbers of “Community-Conserved Areas” in many countries, where local and indigenous communities – not the state – have taken the initiative and declared what is, in effect, a protected area. Community-Conserved Areas (CCAs) can be defined as “natural and modified ecosystems including significant biodiversity, ecological services and cultural values voluntarily conserved by concerned indigenous and local communities through customary laws or other effective means”<sup>90</sup>.

161. CCAs have three essential characteristics. First, the relevant local or indigenous communities are concerned about conservation and sustainable use of the ecosystem or ecosystems in their area, usually because they have either cultural significance or importance for local livelihoods. Second, the decisions and actions of the community result in effective conservation, although protection status may have been established for a variety of objectives, possibly unrelated to conservation per se. Third, the indigenous and local communities hold the decisive power over decision making and implementation of decisions regarding the ecosystems at stake, implying that some form of community authority exists and is capable of enforcing regulations.

162. The distinctive element of CCAs is the fact that institutions of the community – not the state – hold legitimate authority, in the eyes of the community – over an area’s conservation status and the actions taken to conserve it. In some countries – such as Australia and some countries in the Pacific and South America, the state has recognized CCAs and provided useful supporting measures, such as legislation prohibiting fishing in a community-declared marine sanctuary. In other cases, however, government “recognition” has meant the dilution of community authority or even supplanted CCAs with superimposed state forms of protected area status<sup>91</sup>.

### *3.10 Private management*

163. In some parts of the world, large landholders allocate property for conservation purposes, sometimes incorporating tourism. In Natal Province in South Africa, for example, some 8 percent of the land is in publicly-managed protected areas, but an additional 14 percent is under conservation management by private landowners<sup>92</sup>. Privately-owned or managed protected areas are generally established in areas where there are sufficient attractions (such as coral reefs or visible wildlife) to ensure that non-consumptive use of the area’s resources is a commercially attractive land use.

164. There has been considerable recent interest in the idea of private “conservation concessions” as a protected areas management strategy. In one formulation, “under a conservation concession agreement, national authorities or local resource users agree to protect natural ecosystems in exchange for a steady stream of structured compensation from conservationists or other investors”<sup>93</sup>. In its simplest form, therefore, a conservation concession is like a logging or fishing concession, except that the investor pays the government to manage the area for conservation purposes rather than resource extraction.

165. In other cases, a government may essentially lease an existing protected area to investors who agree to manage it for conservation and ecotourism purposes, sharing management and profits with the government. The Nature Conservancy, in a joint venture with an Indonesian tourism venture, is testing this model at Komodo National Park in Indonesia<sup>94</sup>.

### *3.11 Transboundary protected areas*

166. Ecosystems and species do not always conform to national boundaries, and there are many longstanding instances worldwide of cooperation between two or more adjoining protected areas divided by international boundaries, such as the Waterton – Glacier International Peace Park, established in 1932 and straddling the US-Canada border. Many other such examples exist, including the La Amistad

International Park, (Costa Rica and Panama) and the Gaza/Kruger/Gonarezhou Transfrontier Conservation Area (Mozambique, South Africa and Zimbabwe). Such initiatives have symbolic value in promoting peaceful cooperation between nations as well as practical benefits for management. As the focus of conservation has moved towards landscape-scale and ecosystem approaches, and recognition of the importance of corridors and connectivity, interest in the practical conservation benefits of transboundary protected areas has increased<sup>95</sup>.

167. IUCN defines a transboundary protected area (TBPA) as:

An areas of land and/or sea that straddles one or more boundaries between states, sub-national units such as provinces and regions, autonomous areas and/or areas beyond the limits of national sovereignty or jurisdiction, whose constituent parts are especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed co-operatively through legal or other effective means<sup>96</sup>.

168. As of 2001, there were at least 169 complexes of two or more adjoining protected areas divided by international boundaries, involving a total of 666 protected areas representing 113 countries. Levels of formalization and cooperation vary, with some already established as TBPAs, but all with potential to become formal TBPAs<sup>97</sup>.

169. IUCN identifies the principle benefits of TBPAs as:

- Promoting international cooperation at different levels and in different fora;
- Enhancing environmental protection across ecosystems;
- Facilitating more effective research;
- Bringing economic benefits to local and national economies; and
- Ensuring better cross-border control of problems such as fire, pests, poaching, marine pollution and smuggling.

170. TBPAs may be established through high-level political initiatives, local efforts by protected area staff on the ground, or the intervention of third parties such as NGOs. In some cases, transboundary “peace parks” have been established as a strategy for reconciliation in areas of recent conflict. While TBPAs can have many benefits, their establishment must often overcome difficulties related to differences in legal systems, culture, and capacity levels (See Box 8).

**Box 8**

*Potential difficulties for transboundary protected areas cooperation*

- Difficult terrain, inaccessibility, and lack of transboundary transportation links;
- Differences or conflicts in legal frameworks and provisions;
- Impediments to rapid response to emergency situation where transnational consultation is required;
- Misunderstandings based on religious or cultural differences;
- Language barriers;
- Imbalances in power between partners due to differential commitments of resources;
- Different levels of professional standards in protected areas agencies;
- Variable levels of authority given to protected areas directors on each side of the border;
- A lack of parity with regard to the ratification of international protocols or conventions;
- Incompatible policies with regard to resource use versus resource protection;
- Political tension or armed conflict;
- Technical incompatibilities in communication, fire suppression equipment, GIS systems, etc.

Source: Hamilton et al. 1996.

### *3.12 Managing protected areas: Key responsibilities and tasks*

171. Whatever type of governance structure a protected area has, the core tasks of management remain roughly the same, although their relative importance and the methods for carrying them out will necessarily vary from place to place. Financial resources also greatly influence the thoroughness with which these various responsibilities can be implemented. In general, the key tasks which protected areas managers must carry out include:

172. Delineation of protected area boundaries. Physical survey and marking of boundaries – and, in some cases, the boundaries of zones within a protected area – are important, but a protected area needs “living boundaries” that are understood, agreed and respected by local stakeholders. Thus, the process typically involves negotiation and consensus-building, not just surveying and installing boundary markers.

173. Development and maintenance of infrastructure and equipment: Infrastructure needs will vary with the type of protected area, and may include office buildings, vehicles, research facilities and equipment, roads, water supply, communications equipment, firearms and amenities for visitors. Maintaining equipment and facilities over time is, of course, as important as initially installing or acquiring it.

174. Personnel, financial and administrative management: Like any organization, a protected area management entails a considerable amount of work in recruiting, managing and retaining qualified staff; managing and accounting for money; and other administrative tasks. Identifying and responding to capacity-building needs is an important elements of this set of tasks.

175. Surveillance and law enforcement: Since most parks are under threat from various forms of human encroachment, much of which is illegal, patrol and enforcement is often a key task for protected areas managers. To effectively carry out these tasks, personnel must have a good understanding of the law, sufficient training, in some cases, in the use of firearms, and a well-established relationship with law enforcement authorities. Strong links to law enforcement agencies are particularly important in situations where violators may be well-organized and well-armed, as is often the case with illegal fishing, logging, and wildlife poaching. Enforcement tasks become much easier when relationships with local communities and other stakeholders are friendly and based on agreed rules and principles. In the ideal situation, local communities themselves support conservation of the area and assist with surveillance.

176. Biological monitoring and assessment: Protected area managers can only determine if their management regime is serving its conservation objectives through systematic monitoring, over time, of the key biological components that are the conservation targets of the protected area, such as key species, habitats and communities. This set of tasks can be facilitated through collaborative arrangements with universities, scientific institutions, and conservation organizations. In many places, the traditional knowledge of local and indigenous communities may also enhance monitoring efforts, if those communities have been brought into the management planning process through a good participatory process.

177. Managing tourists, researcher and bioprospectors: Many protected areas receive very large numbers of tourists, as well as scientists and bioprospectors conducting research within the area. Managers therefore must think about conditions, permits and fees for entry, the provision of information through maps, briefings, and exhibits, monitoring visitors' actions to ensure they obey the rules, and attending to the medical needs of visitors who meet with accidents or fall ill. With respect to scientists and bioprospectors who wish to obtain access to genetic resources in protected areas, appropriate conditions should be respected, such as the prior informed consent of competent national authorities and agreement on the terms of access, including benefit sharing. These may vary depending on the intended use of the resources accessed, whether commercial or non-commercial. (See Box 9.)

**Box 9**

*Access to genetic resources and benefit sharing in protected areas*

The third objective of the CBD provides for the fair and equitable sharing of benefits arising out of the utilization of genetic resources. Article 15 addresses the terms and conditions for access to genetic resources and benefit-sharing. It recognizes the sovereignty of States over their natural resources and provides that access to these resources shall be subject to the prior informed consent of the Contracting Party providing such resources. It also provides that access shall be based on mutually agreed terms in order to ensure the sharing of benefits arising from the commercial or other utilization of these genetic resources with the Contracting Party providing such resources. In addition, under article 8, paragraph (j) of the Convention, Parties have undertaken to encourage the equitable sharing of benefits arising out of the utilization of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity.

At its sixth meeting, in 2002, the Conference of the Parties adopted the Bonn Guidelines on Access to Genetic Resources and the Fair and Equitable Sharing of the Benefits Arising Out of their Utilization. The guidelines are to assist Parties, Governments and other stakeholders in developing an overall access and benefit-sharing strategy, and in identifying the steps involved in the process of obtaining access to genetic resources and benefit-sharing. More specifically the guidelines are to assist Parties, Governments and other stakeholders when establishing legislative, administrative or policy measures on access and benefit-sharing and/or when negotiating contractual arrangements for access and benefit-sharing.

Up until now, different approaches have been adopted to address access to genetic resources and benefit-sharing in protected areas. While certain countries, such as Costa Rica and the Philippines, have developed national legislation for access to genetic resources and benefit-sharing which provide that access to genetic resources in protected areas will be conditional to the prior informed consent of the competent authority in protected areas, a number of countries have no specific policies to address access to genetic resources and benefit-sharing in protected areas. Examples of access and benefit-sharing arrangements related to genetic resources from protected areas are included in Laird and Lisinge (2002).

178. **Maintaining good relationships with local communities:** Where people are living in or adjacent to protected areas, managers will need to devote considerable time and skill to ensuring that relationships with these communities are harmonious. In cases where an area is governed under a co-management regime, working with local communities may be the most important and time-consuming of a manager's tasks.

179. **Resolving conflicts and disputes:** Disputes between protected areas authorities and other stakeholders – such as local communities, business interests, or even other government agencies – inevitably arise. Managers therefore need to establish processes for discussing and resolving such disputes and, if necessary, referring them to other authorities.

180. **Practicing adaptive management:** Over time, most protected areas managers find that they need to change one or another aspect of the management system they oversee. Methods to systematically assess management objectives and activities and adjust them in light of experience and changing circumstances have been developed and widely employed<sup>98</sup>, and managers need to adapt and employ these for their own particular situations.

181. **Promotion and Fundraising:** Lastly, protected area managers need to actively promote the values and successes of their protected area, and lobby both the government and other potential sources of financing for funding. Both tasks are simplified if managers monitor the results of their management, in order to show the world that their protected area is carrying out its mission effectively and efficiently. Some managers may find it advantageous to engage with the media, so that both successes and scarce funding can be brought to the attention of a wider audience.

182. A much more complex and detailed analysis of the tasks required of protected areas managers and the skills needed to discharge them, based on extensive research and consultation in Southeast Asia has been carried out by the ASEAN Regional Centre for Biodiversity Conservation (ARCBC)<sup>99</sup>. The report describes 24 key protected areas jobs, divided into 17 technical categories and five levels, and

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elaborates a total of 250 distinct skills needed for protected areas management and the performance standards needed to fulfill them. As such, it is an important effort to provide guidance and detail on what is meant by the often-used but rarely-defined term “capacity-building” with respect to protected areas management.

#### IV. FINANCING PROTECTED AREAS

##### 4.1 *The reasons that protected areas are under-financed*

183. It is widely recognized that the financial resources available for biodiversity conservation in general and protected areas in particular are grossly inadequate, particularly in the developing countries. The systemic reasons why financial resources for conservation are inadequate is relatively straightforward: The value of Earth’s “natural capital” is poorly understood and greatly under-valued by markets, politicians and the general public. In addition, most developing country governments have few financial resources to devote to conservation in the face of more immediate and pressing concerns such as alleviating poverty, promoting economic growth, and servicing international debt burdens.

184. Short-term political horizons encourage the exploitation of biological resources to meet short term economic goals. However, liquidation of these natural assets often goes unaccounted in national and company balance sheets, thus artificially reducing costs and inflating profits. The considerable economic value of ecosystem services (previously discussed) do not register in conventional markets (value does not become price), and are therefore not considered to be “real” economic assets by policymakers. At the same time, perverse incentives (e.g., ill-considered subsidies) further undermine the weight of biodiversity concerns in decision-making processes. One recent study concluded that globally, subsidies which are both economically and ecologically perverse totals between \$950 billion and \$1950 billion each year<sup>100</sup>.

185. This systemic under-valuation of biodiversity results in a common view that establishment of protected areas incurs huge opportunity costs, particularly for developing countries. Thus, limiting the use of biological resources by putting them in a protected area:

....may be perceived by both land owners and the host country government as a foregone development opportunity, one of the few such opportunities available, and should be treated as such by its advocates and beneficiaries rather than as a global resource that the host country has an obligation to protect. To a tropical developing country facing limited options, a development opportunity may be as scarce and its loss as irreversible as endangered species and habitats are to the developed world. Once biodiversity conservation is viewed as a foregone development opportunity by both sides, the critical question is what would it take to compensate the host country for the lost opportunity.<sup>101</sup>

186. These opportunity costs are not as great as they are perceived to be to governments, of course, if they accept that biodiversity and the protected areas that conserve it have tangible economic value themselves, and some governments have come around to this perspective, particularly when they are confronted by the very tangible economic losses arising when ecosystem services such as hydrological function and soil retention fail, resulting in floods, droughts, and water shortages.

187. Local communities, however, often suffer direct economic losses when their access to biological resources (such as bushmeat, timber, non-timber forest products and access to agricultural land) is cut off by establishment of a protected area. While the protected area may be producing considerable economic benefit for society at large in the form of ecosystem services or ecotourism revenues, the affected local people are in essence subsidizing those flows of values to the state and the wider society.

188. Thus, the question of “financing protected areas” cannot be viewed solely in terms of the costs of running a protected area management agency, demarcating boundaries, developing infrastructure, patrolling, research, monitoring, and the like. Ensuring that the burdens of protected area establishment are not disproportionately visited on local communities bears a tangible financial cost that must be factored into the equation. “Hence, conserving relatively intact habitats will often require compensatory

mechanisms to mitigate the impact of private, local benefits foregone, especially in developing countries”<sup>102</sup>.

#### 4.2 *Protected areas financing – the current situation*

189. The gap between the cost of adequately financing protected areas and the current level of actual protected areas funding is very large. A 2002 study estimated the total annual cost of a global, representative system of protected areas at US \$45 billion, including the creation of new areas, recurrent management, and payments to meet private opportunity costs of existing and new areas. The authors noted that while this seems like an exorbitant sum, it represents less than 5 percent of existing agricultural and natural resource subsidies around the world, and equals only 0.2 percent of total global GDP<sup>103</sup>. Another study estimated the annual cost of protecting tropical wilderness areas and major biodiversity priority areas across the developing world at \$30 billion<sup>104</sup>.

190. Actual protected areas funding is an order of magnitude less than these estimates of what is needed. A 1999 study by the World Conservation Monitoring Centre (WCMC), based on data collected 1993 and 1995, surveyed protected area budgets for 123 conservation agencies in 108 countries, representing some 28 percent of the global terrestrial protected area system (3.7 million km<sup>2</sup>). The study identified \$3.2 billion in annual agency budgets with global mean protected area expenditure of \$893 per km<sup>2</sup>, with great regional variations: “Perhaps the clearest finding of the study is the concentration of global protected area expenditures in the developed countries...” where mean expenditure was \$2,058 per km<sup>2</sup>, versus a mean of only \$157 per km<sup>2</sup> in the developing countries. The developed countries accounted for 90 percent of protected area expenditure in the sample, but only 41 percent of the area protected. Meanwhile the developing countries accounted for only 10 percent of expenditure but had nearly 60 percent of the area under protection. Overall, the study found that developing country protected area systems are only funded at approximately 30 percent of adequate levels<sup>105</sup>.

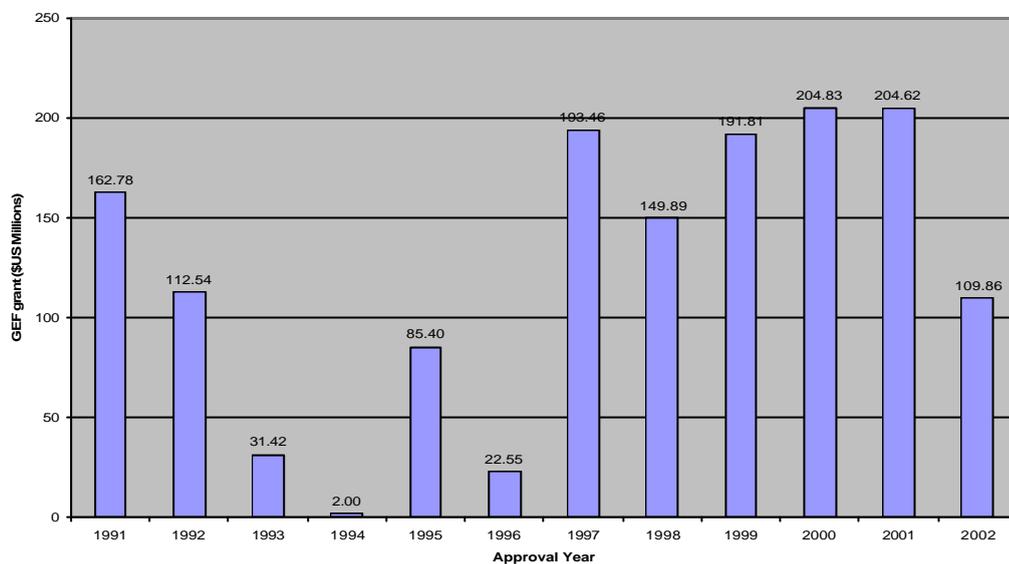
191. Many developing countries depend on foreign assistance to help finance management of their protected areas, but very little foreign aid actually goes to protected areas. According to a 2001 study by the OECD Development Assistance Committee, 19 donor governments provided just under \$3 billion in “biodiversity-related aid” during the three-year period 1998-2000 – less than 3 percent of their total overseas development assistance<sup>106</sup>. This figure, however, covers activities related to water supply, agriculture, forestry, fisheries, general environmental protection and rural development. Thus, it is likely that the total developed government financial support for the management of protected areas for biodiversity conservation objectives is much less than this.

192. The Global Environmental Facility (GEF) operates the CBD’s financial mechanism, and as such has provided significant funding to implement CBD objectives, including protected areas. The GEF reported to the Sixth COP on spending under its biodiversity portfolio for July 1999- June 2001. During that period, GEF allocated \$434 million in grant financing out of total project costs of \$1.666 billion. The non-GEF project cost total of \$1.232 billion was leveraged in co-financing for project activities from bilateral and multilateral agencies, recipient countries and the private sector. The report also notes that since the establishment of the GEF as a pilot program in 1991 through June 2001, over \$1.3 billion has been provided in grants from the GEF Trust Fund for biological diversity activities, complemented by \$1.3 billion in co-financing, for a total of \$2.6 billion<sup>107</sup>.

193. Analysis of GEF data from 1991 through 2002 reveals that total GEF allocations to the biodiversity focal area for that period were almost \$1.5 billion (see Figure 2).

Figure 2

**GEF Financial Allocations to the Biodiversity Focal Area 1991-2002**



Source: Data compiled from <http://www.gefonline.org>.

194. Not all GEF biodiversity projects actually support protected areas, but many do, as reported by a number of recent GEF studies. A 2001 study of GEF's biodiversity program undertaken by the GEF Monitoring and Evaluation Unit provides information on the proportion of GEF biodiversity financing that supports protected areas projects. The study reviewed all full- and medium-size GEF projects completed or under implementation as of June 30, 1998, and reported that 49 of these project (62 percent) included activities such as "establishing new protected areas, developing management plans, setting up sustainable financing of protected areas, addressing sustainable use related to protected areas, and encouraging the participation of stakeholders and local beneficiaries." These 49 projects affected about 320 protected areas covering a total of about 60 million hectares, and involved about \$350 million in funding<sup>108</sup>. Another GEF review concluded that GEF funded 894 Protected Areas covering 162 million hectares through 169 projects over a 10 year period with US\$960 million (FY91-01)<sup>109</sup>.

195. The latest analysis (2003) of the GEF biodiversity portfolio indicates that there are 199 projects (34 percent of the total of 590) that have a protected area identified as being within the project's target area. GEF financing of these projects is nearly \$1.1 billion, with co-financing of over \$2.4 billion. The 1056 protected areas identified in these projects cover nearly 227 million hectares. GEF therefore concludes that, based on the best information it has on the area of protected areas in developing countries and countries with economies in transition, the GEF contributes to 26.5 percent of protected areas, measured by area, in those countries<sup>110</sup>.

196. The GEF is, therefore, a significant source of international financing for protected areas, and it will continue to be so in the coming years. The 2002-2006 GEF replenishment, agreed in mid-2002, totals \$2.92 billion, and over the next three years, roughly US \$900 million of this will be programmed for biodiversity projects in developing countries and countries with economies in transition<sup>111</sup>. A May 2003 GEF document states that "Protected areas (PAs) remain the critical foundation of biodiversity conservation worldwide, and as such, they will continue to be supported as a major thrust of GEF-3. This

priority encompasses the achievement of ecological, institutional, social, political and financial sustainability in the context of national level PA systems”<sup>112</sup>.

197. Continued support for protected areas from the GEF and other multilateral and bilateral donors is crucial for developing countries, since developing country governments allocate very little to protected areas themselves. Although the data are very sketchy, outside of external assistance, developing country governments across the world are probably allocating a total of only between \$50 and \$100 million annually towards the direct costs of protected areas and conservation.

198. In addition to public funding, a rough estimate of the private annual grant-based funding worldwide for conservation (private foundations, corporations, and individuals) approaches US \$1.5 billion, with about US \$600 million from foundations<sup>113</sup>. Much of this is channeled through the large international NGOs.

199. One relatively new and distinctive source of protected areas funding is the United Nations Foundation (UNF), set up in 1998 by CNN founder Ted Turner to support a variety of UN-related causes. In 1999, the Foundation adopted, in consultation with a number of UN agencies, including representatives of the CBD Secretariat and IUCN, a Biodiversity Program Framework that targeted the Foundation’s Biodiversity Grants for the benefit of World Natural Heritage sites and Coral Reefs. Between 1999 and 2003, UNF financing, channeled through the UNESCO World Heritage Centre and the UNDP-GEF Secretariat has benefited some 45-50 protected areas designated as World Natural Heritage on the basis of their global biodiversity significance, as well about 13 additional protected areas that have the potential to satisfy biodiversity criterion and conditions to be declared as World Heritage. Spread over about 30 countries in Africa, Latin America and South and Southeast Asia, this support has been critical in attracting support from private sector firms for World Heritage sites. UNF support has also catalyzed a number of NGOs to rally behind the UNESCO World Heritage Centre, and encouraged IUCN to support protected area management in sites declared as World Heritage.

200. Although a weak global economy has slowed the growth of private financial support for conservation, private support is likely to grow in coming years. A number of large new private foundations that provide significant support for conservation have been established in recent years. In addition, socially responsible investment funds and key resource-related industries are starting to recognize the importance of biodiversity and starting to shift business and investment practices to lessen biodiversity impacts, as well as increasing their direct investments in sectors and activities that support conservation.

201. While more in-depth data and analysis would be useful, it nevertheless seems clear that funding levels worldwide for protected areas, particularly in developing countries, remain an order of magnitude below funding needs, and fall even further below any reasonable assessment of the value of protected area conservation benefits to humanity. Given the fact that conservation of biodiversity provides global as well as national benefits, it is clear, as the Johannesburg Plan of Implementation stresses, that more effective conservation of biodiversity – including strengthening the role of protected areas – will require new and additional financial resources provided by the developed countries to the developing countries.

### ***4.3 The need for long-term sustainable protected areas financing***

202. Inadequate funding per se is not the only financing problem that protected areas face. Worldwide, the bulk of funding for conservation comes from short-term development assistance projects (3-5 years) and erratic annual government allocations. Sustainable, secure, long-term protected areas finance mechanisms, such as national conservation trust funds, dedicated green taxes (e.g., airport departure tax) and resource user fees (e.g., park entrance fees) are presently the exception to the rule.

203. About 25 national-level conservation trust funds currently exist, complemented by about another 20 national-level environment funds with scopes broader than conservation. Most of these take the form of permanent endowments, with about 5 percent investment returns from the endowments allocated to conservation annually. While such endowed funds have proven successful in many cases, they exist in

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only about one-fourth of the world's countries. Another problem is that the endowment capital in the national funds in developing countries total only about US \$2 billion (this figure might even be lower given the recent stock market declines), well below the endowment targets designated by the creators of these funds<sup>114</sup>.

204. Only about 20 countries in the world are taking significant advantage of tourism-related user fees as a source of long-term, dedicated revenue for conservation. Most of these are industrialized countries. Due to the uncertain policy environment and the fact that many such markets are in the very early stages of development, only a handful of countries are utilizing other sustainable financing sources such as water fees, carbon and other payments for environmental services. However, such payments have the potential to become significant sources of funding for protected areas in the future.

205. Barriers to expanding sustainable financing mechanisms for protected areas include:

- Insufficient contributions by external donors to endowments;
- Lack of political will of host-country governments to put sustainable finance mechanisms in place in the face of competing, short-term financial priorities;
- Lack of capacity (technical knowledge, institutional know-how and specialized tools) needed to assess and implement sustainable finance mechanisms.

#### ***4.4 The need to invest in protected areas strategically***

206. What funds there are to support protected areas are not being allocated very strategically, resulting in diffuse, unbalanced, un-prioritized and often ineffective interventions. Spending is particularly uneven between developed and developing countries, and is often not targeted at the most important and threatened components of the planet's biodiversity. Relatively vast sums are spent in developed countries for marginal conservation benefit, while conservation needs in the less-developed tropics go largely unmet.

207. With limited financial resources, it is imperative that funds be allocated as strategically and efficiently as possible. There are several dimensions to this problem:

208. Lack of focus and rigor in deciding where to invest: The numerous systematic efforts to scientifically set geographic conservation priorities at both national and global levels were discussed above, and some funding institutions are utilizing these frameworks. In general though, at the global level and within countries, resources are not being allocated in accordance with these new science-based priority frameworks, and funds are thus not getting to many priority ecoregions. Even within priority ecoregions, resources are generally not being allocated effectively to priority sites. It is understandable that economic and political pressures and priorities will always influence such decisions, but where these pressures dominate decisions on protected areas investment rather than transparent methodologies based on science, it cannot be said that funds for protected areas are being efficiently invested for the purpose of conserving and sustainably using biodiversity.

209. One recent study reported that conservation costs varied from as little as US\$0.20 per hectare per year in parts of the Brazilian Amazon, up to more than US\$1 million per hectare per year in some projects in Europe. While there are certainly important reasons to conserve that one hectare in Europe, it seems unlikely that the benefit of doing so is five million times greater than the benefits of conserving one hectare of the Amazon. The example may be extreme, but it illustrates the gross imbalance in funding available for conservation in rich and poor countries. Smaller but equally questionable differences in the cost of conservation interventions can be seen even within a small country, such as New Zealand, where a recent study found that some projects were 30 times more cost-effective than others<sup>115</sup>.

210. Weaknesses in investment project design: While some funders use a logical framework approach to designing projects, even this method generally lacks sufficient rigor in terms of identification of conservation targets, identification of threats to these targets, and design of a full range of effective threat mitigation strategies. This often leads to external donor-funded projects that are not as well

designed as they could be and often omit or gloss over key sustainability elements such as sustainable finance mechanisms, compatible enterprise strategies, media campaigns and public awareness activities, and policy and institutional reforms.

211. Inadequate efforts to measure effectiveness: Not enough is being invested in systems for measuring success of conservation projects to determine what works. Monitoring, analyzing and reporting this information is an essential element for both improving management effectiveness and garnering political and financial support for increasing investment in protected areas.

#### **4.5 *Harnessing private financial flows***

212. In general, private financial flows are having adverse impacts on biodiversity outside of protected areas, and not being utilized to expand biodiversity-friendly business opportunities.

213. In the past decade, there has been a dramatic shift in public versus private financial flows: private financial flows to developing countries now far outstrip public development aid. In the last ten years, foreign direct investment (FDI) to developing countries has quadrupled from approximately US\$60 billion per year in the early 1990's to US\$241 billion in 2000. Of the 19 percent of FDI flow to developing countries, 80 percent goes to 10 main recipients: China, Brazil, Mexico, Singapore, Thailand, Argentina, Indonesia, South Korea, Poland and Chile. Only 0.7 percent of the world's FDI reaches African countries, leaving the poorest countries of Africa<sup>116</sup>. FDI is having significant adverse impacts on biodiversity outside protected areas, through financing of unsustainable logging, agriculture, tourism development, petrochemical and mining operations, and other activities<sup>117</sup>.

214. Conversely, there is considerable potential to harness these private financial flows to support conservation. Properly designed, new environmental business opportunities (e.g. ecotourism, organic agriculture, shade-grown coffee, certified forestry, etc.) can contribute significantly to biodiversity conservation by shifting local employment away from more destructive livelihood activities (e.g., blast fishing, large-scale commodity crop monoculture). Yet major barriers exist to scaling up such environmental businesses, including lack of technical business planning capacity, lack of investment capital, lack of a pipeline of viable enterprises for investment, and difficulties with engaging the financial services industry.

215. The lack of demand for environmentally-friendly goods and services remains the biggest impediment. Overcoming this challenge requires a serious marketing effort, or alternatively, clearly defined and agreed obligations (e.g. biodiversity conservation targets) and accompanying policy incentives.

216. It is worth noting the recent growth of carbon markets, but these initiatives are largely focused on energy conservation, with relatively little investment in forest-based carbon sequestration. Even where the latter has occurred, the benefits to biodiversity are hotly debated and unlikely to be replicated in the near future, due to the exclusion of "avoided deforestation" as an eligible activity in the tropics under the Kyoto Protocol, and the probable dominance of intensive, exotic species plantations in the emerging market for carbon sequestration services<sup>118</sup>. Promoting carbon sequestration projects (through the UNFCCC and otherwise) that take into account biodiversity considerations will be critical to the success of many biodiversity conservation efforts, including those in and around protected areas.

#### **4.6 *Innovative strategies for raising protected areas revenue***

217. Increasing the level of protected areas financing will require resort to a much broader spectrum of financing instruments and mechanisms than the traditional sources of funding from national government budgets, aid agencies and multilateral financial institutions. Many innovative mechanisms exist and have been extensively documented and analyzed. The Conservation Finance Alliance – a consortium including numerous international conservation organizations, the Secretariat of the Ramsar Convention, UNDP, the World Bank, the GEF, GTZ and USAID – has produced a comprehensive Training Guide for Conservation Finance Mechanisms<sup>119</sup> on CD-ROM, and numerous related publications have been

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produced by its members. The Guide contains comprehensive information and decision tools on a wide range of conventional and innovative finance mechanisms.

218. In brief, some of the more important innovative strategies and instruments for financing protected areas include the following<sup>120</sup>:

219. Debt-for-Nature Swaps: Initiated during the Latin American debt crisis of the 1980s, debt-for-nature swaps enable developing countries to reduce their foreign debt while generating additional revenues for conservation activities. Such swaps take two main forms. The first is the commercial debt-for-nature swap in which (a) a bank or other commercial creditor agrees to sell debt owed to it by a developing country to third parties at a substantial discount from the debt's face value, because the creditor does not expect the debtor government to ever to fully repay its debts; (b) conservation organizations raise funds to buy the discounted debt from the creditor; and (c) the conservation organizations come to an agreement with the debtor government on the amount of local currency that the government will spend on new conservation organizations in exchange for the conservation organizations' cancellation of the debt. The second form is a bilateral debt reduction program, involving the cancellation of "sovereign" debt owed by one government to another, in exchange for an agreed level of new and additional conservation expenditure by the debtor government in local currency.

220. Conservation Trust Funds: As previously noted, a number of countries have established conservation trusts funds of various kinds over the past decade or so. These may take the form of endowment funds (in which the capital is never spent), sinking funds (which spend not only their investment income but a portion of their capital each year), and revolving funds (which are continually replenished by income from dedicated fees or taxes). Endowment funds are the most common.

221. User Fees, taxes and other charges that are earmarked for protected areas: These can be voluntary or mandatory and may include:

- fees for protected area entry, concessions (such as restaurants), and recreational activities such as diving;
- airport and cruise-ship passenger charges;
- hotel room surcharges; taxes on hunting, fishing and camping equipment;
- royalties for resource extraction (e.g. petroleum) and rights of way for infrastructure such as transmission lines and pipelines;
- payment for ecosystem services (such as watershed maintenance and carbon sequestration); hunting and fishing fees;
- fuel and property taxes;
- lottery revenues;
- bioprospecting fees; and
- fines for illegal logging, hunting, fishing, and pollution damage.

222. All of these innovative instruments and mechanisms have considerable potential for raising protected areas revenue, but they all share a common drawback: they are new, and frequently complex to implement – at least the first time – with significant administrative and other start-up costs. Investments in building capacity to implement innovative conservation finance initiatives should therefore be a high priority for donors, governments, international conservation organizations, and the Parties to the CBD. As noted above, the tools are largely in place, the challenge is to empower and mobilize protected areas managers and policymakers to use them, particularly in the developing countries.

#### 4.7 *Mainstreaming protected areas into sustainable development financing*

223. Despite the potential of these market-based mechanisms, the “business case” for protected areas – even using the new insights of “ecological economics” concerning the values of ecosystem services – will not generate funds for all protected areas. Some of them are too remote, and in others, the pressures for short-term exploitation of their resources are too strong. In any case, as previously discussed, humanity values protected areas for reasons other than purely economic ones.

224. In the tropical developing countries – where biodiversity is richest and the threats to it are greatest – public development assistance provided by the developed countries through their bilateral agencies and the multilateral financial institutions must remain a cornerstone of protected areas financing, and must increase if protected areas in those countries are to survive. For this to happen, protected areas must come to be seen as an essential part of sustainable development, not a “luxury good” that only rich countries can afford.

225. In 2000, the world’s leaders, meeting at the UN Millennium Summit, agreed on the Millennium Development Goals (MDGs), an ambitious program to substantially roll back poverty, hunger, disease, and other ills afflicting the world’s poorest countries by 2015. (See Box 10.)

#### **Box 10**

#### **The Millennium Development Goals**

- Goal 1: Eradicate extreme poverty and hunger  
Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day  
Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger
- Goal 2: Achieve universal primary education  
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling
- Goal 3: Promote gender equality and empower women  
Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and to all levels of education no later than 2015
- Goal 4: Reduce child mortality  
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate
- Goal 5: Improve maternal health  
Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio
- Goal 6: Combat HIV/AIDS, malaria and other diseases  
Target 7: Have halted by 2015, and begun to reverse, the spread of HIV/AIDS  
Target 8: Have halted by 2015, and begun to reverse, the incidence of malaria and other major diseases
- Goal 7: Ensure environmental sustainability  
Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources  
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water  
Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers
- Goal 8: Develop a Global Partnership for Development  
Target 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system (Includes a commitment to good governance, development, and poverty reduction – both nationally and internationally)  
Target 13: Address the Special Needs of the Least Developed Countries (Includes: tariff

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	and quota free access for LDC exports; enhanced programme of debt relief for HIPC and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction)
Target 14:	Address the Special Needs of landlocked countries and small island developing states (through Barbados Programme and 22nd General Assembly provisions)
Target 15:	Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term
Target 16:	In cooperation with developing countries, develop and implement strategies for decent and productive work for youth
Target 17:	In cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries
Target 18:	In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

226. The MDGs are now a key organizing principle for development assistance for the agencies of the UN system, the multilateral development banks, and many bilateral agencies, and the MDG goals and targets will likely drive the direction of most development aid for the coming decade.

227. Will this increase or decrease donor financial support for protected areas? One of the indicators for meeting Goal 7 (“Ensure Environmental Sustainability”) is indeed the “amount of land area protected to maintain biological diversity”. But this will only be taken seriously to the extent that the case can be made to governments and donors that protected areas are, in fact, an essential element of efforts to eradicate poverty, hunger, disease, and environmental degradation.

228. Numerous studies and meetings have produced a wealth of analysis and case studies illustrating the linkages between conserving biodiversity and alleviating poverty, hunger and disease<sup>121</sup>. But the specific case for financing protected areas as an integral part of projects to achieve the MDGs is still not well-accepted by either donors or governments.

## V. MEASURING THE EFFECTIVENESS OF PROTECTED AREAS MANAGEMENT

### 5.1 Rationale for measuring management effectiveness

229. Today, almost a tenth of the world's land surface is in some form of protected areas, and there is an extensive and growing network of marine protected areas. Despite this progress, relatively little is known about the status of many protected areas, and what is known suggests that many are faced with a wide range of threats and are not functioning very effectively. Consequently, there has been considerable interest in monitoring and evaluating the effectiveness of protected areas in support of improved management and to enable protected areas to fulfill the aims for which they were established.

230. Assessing effectiveness is also important for strengthening financial and political support for protected areas. In the words of one recent study:

Critics claim that in the context of growing human pressures and development needs, parks cannot protect the biological resources within their borders, and there is a widespread sense that parks are simply not working. The accuracy of these claims is of critical importance to policy and funding decisions. If parks are failing despite best efforts, then better options should be sought. If, on the other hand, parks are performing relatively well in the context of serious threats and limited resources, or are simply performing better than the alternatives, their level of support should be increased<sup>122</sup>

231. Obtaining greater understanding of the effectiveness of marine protected areas is currently of special concern for a number of reasons (See Box 11).

232. Cifuentes et al. define effective protected area management as “the combination of actions that make it possible to satisfactorily fulfill the function for which the area was created, based on the area’s

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particular traits, capacities and context<sup>123</sup>. Measuring the effectiveness of protected areas encompasses many different aspects, ranging from design issues; achievement of stated objectives; the identification and reduction of threats; management capacity and effectiveness; and financial viability and sustainability of protected area systems and individual sites.

**Box 11**

**Measuring the effectiveness of marine protected areas**

Marine ecosystems are faced with a range of serious threats including pollution, overexploitation, conflicting uses of resources, damage and destruction of habitats, and other harmful consequences of human development. Yet Marine Protected Areas (MPAs) account for less than 1% of total area and there is very little information on whether even that miniscule portion of the planet's marine heritage is being effectively protected. A 1995 IUCN study on MPAs concluded that:

- Data on management effectiveness are sketchy, pointing to a general absence of evaluation of management effectiveness.
- Only 31 percent of those MPAs for which data were available (383 sites out of 1,306) were assessed as having a high management level and generally achieved their management objectives, while the majority ranked either "moderate" or "low".
- Reasons for MPAs failing to achieve their management objectives included: insufficient financial and technical resources to develop and implement management plans; lack of trained staff; lack of data on which to base management decisions; lack of public support; unsustainable use of resources within MPAs; impacts and threats from areas outside the boundaries of MPAs; and lack of clear organizational responsibilities for management, as well as absence of coordination between agencies with responsibilities relevant to MPAs<sup>124</sup>.

The years since 1995 have seen the establishment of many new MPAs, an increased emphasis on management planning<sup>125</sup>, and the development of assessment frameworks for the effective management of marine protected areas<sup>126</sup>. MPAs were also highlighted in the WSSD Johannesburg Plan of Implementation (Paragraph 31(c)), which calls for the "establishment of marine protected areas consistent with international law and based on scientific information, including representative networks by 2012". The issue of MPA effectiveness has been specifically taken up by the CBD ad hoc Technical Experts Group on MPAs, which met twice (in 2001 and 2002) and produced detailed recommendations on evaluating MPA effectiveness<sup>127</sup>.

Nevertheless, a great deal remains unknown about which approaches to MPA design and management are most effective in conserving marine biodiversity. Expert views differ, for example, on the balance to be struck between "no-take" versus sustainable use MPA approaches<sup>128</sup>.

233. Reasons for evaluating protected area effectiveness include the following:

- Evaluation supports adaptive management, a circular process that allows information concerning the past to feed into and improve management in future. Evaluation consists of reviewing the results of actions taken and assessing whether they have produced desired results. Evaluation focuses attention on management objectives, and supports a process of learning in improving management action<sup>129</sup>.
- Evaluation may also be used to support program and project planning either during initial design or in reviewing previous programmes in order to apply lessons learned. Programmatic reviews may also be used to assess whether particular programs should be continued or resources re-allocated to other operational areas<sup>130</sup>.
- A prime objective of evaluation is the development of an open, accountable and professional approach to management. Evaluation is thus an essential tool for ensuring both financial and managerial accountability and management effectiveness. Evaluation thereby helps governments and other funding bodies to assess whether results are being achieved commensurate with effort and resources expended, and in line with policy and management objectives<sup>131</sup>.

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- Evaluation is also used to influence policy to improve protected area systems and management arrangements, and may be used by managers to develop requests or proposals for additional resources – such requests are more likely to be successful when they can be justified on the basis of evaluation results.
- Further, an assessment of management effectiveness is important in reviewing how well the interests of local communities and other stakeholders are being taken into account within the context of protected area objectives and programmes.
- Finally, improved management effectiveness through monitoring, evaluation and reporting are vitally important in enabling countries to meet obligations under international and regional conventions and programmes calling for the establishment of protected area systems and sites.

234. Despite the acknowledged importance of effectiveness evaluation, comprehensive evaluations have been relatively rare. Some effectiveness assessments have been carried out, of course, but they have tended to focus on monitoring biological conditions<sup>132</sup>, assessing a limited set of management indicators. One-off evaluations of a management agency or one of its programs have been more common,<sup>133</sup> and over the past few years, NGOs have become increasingly involved in undertaking assessments of protected areas effectiveness, as discussed below. At regional and global scales, publications such as the United Nations List of Protected Areas<sup>134</sup>, Protecting Nature: Regional Reviews of Protected Areas<sup>135</sup>, and regional overviews such as Protected Areas Systems Review of the Indo-Malayan Realm<sup>136</sup>, have provided some information on management effectiveness. But these reviews were not intended to provide systematic evaluations of management effectiveness, and do not do so.

235. In the past few years, however, efforts to develop more robust and comprehensive approaches have proliferated. Most prominent among these is the IUCN Framework for Assessing Management Effectiveness, which provides an “umbrella” of guiding concepts under which a range of more specific methodologies have been developed.

## 5.2 *The IUCN framework for evaluating management effectiveness*

236. The IUCN framework was developed over a three-year period by the IUCN World Commission on Protected Areas (WCPA) Task Force on Management Effectiveness, in association with the IUCN/WWF Forest Innovations Project, WWF Netherlands, WWF Forests for Life Campaign, WWF/World Bank Alliance and the World Heritage Convention. The report *Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas*<sup>137</sup> sets out theoretical and methodological aspects, and also contains six case studies on the application of the framework in both developed and developing countries. A key aspect of this framework is that it may be used to build an evaluation methodology at the level of an individual protected area or for a system of related protected areas. (See Table 2 and Figure 3.)

237. Components of the IUCN framework include design of systems and individual protected areas (context and planning), appropriateness of management systems and processes (inputs and processes), and delivery of protected area objectives (outputs and outcomes). These components are divided into six elements, elaborated below, each comprising a number of evaluation indicators to assess management effectiveness.

238. Context: Evaluation indicators are aimed at answering the question where are we now? This includes assessment of conservation and other protected area values (e.g. biological, cultural, and economic), as well as current status, threats and opportunities affecting protected areas, including the broad policy environment. The four main criteria where effectiveness is assessed are significance (e.g. an international site, hosts endemic threatened species, contains unique ecosystems), threats (e.g. internal, external, resource exports), vulnerability (extent to which a protected area can withstand the impact of identified threats, and includes human and natural dimensions) and national context (e.g. policy framework, ability and willingness to pay for protection). The focus of this evaluation is on status.

239. **Planning:** Evaluation is aimed at answering the questions where do we want to be and how are we going to get there? Assessment considers the appropriateness of national protected area legislation and policies, plans for protected area systems, the design of individual protected areas and plans for their management. The selection of indicators depends on whether a whole system or an individual protected area is being considered. For example, issues of ecological representativeness and connectivity will be important at the systems level, while shape, size, location and detailed management objectives and plans will be the focus of assessment for individual protected areas. The focus of this evaluation is on appropriateness.

240. **Inputs:** The key question here is what do we need? Assessment is aimed at determining the adequacy of resources in relation to the management objectives for a system or a site, based primarily on measure of staff, funds, equipment and facilities required at either agency or site level, along with consideration of the importance of partners. This question is directly related to considerations of financial viability and sustainability. The focus of this evaluation is on resources.

241. **Process:** The question addressed here is how do we go about it? Assessment is aimed at reviewing the adequacy of management processes and systems in relation to the management objectives for a system or site. Indicators include aspects related to day-to-day maintenance, adequacy of approaches to local communities, and various types of natural and cultural resource management. The focus of this evaluation is on efficiency and appropriateness.

242. **Outputs:** The key questions on this issue are what did we do and what products or services were produced? Output evaluation considers what has been done by management, examines the extent to which targets, work programmes or plans have been implemented, and assesses the delivery of products and services. The focus of this evaluation is on effectiveness.

243. **Outcomes:** The true test of management effectiveness is what did we achieve? Evaluation is therefore aimed at assessing whether management has been successful with respect to the objectives in a site or system plan and ultimately, the aims of the IUCN category of the protected area. Approaches to outcome evaluation involve long-term monitoring of the condition of biological and cultural resources of the system/site (including progress with respect to threat reduction), socio-economic aspects of use, and the impacts of the management of the system/site on local communities. The choice of indicators to be monitored is critical and the focus of this evaluation is on effectiveness and appropriateness.

244. Guidelines on applying the IUCN Framework include a procedure for identifying the type of evaluation likely to be needed (e.g. toward the 'context' or 'outcome' end of the spectrum); presenting the assessment; selecting and prioritizing indicators; and developing an evaluation system. The framework also provides a list of potential indicators to be used within the evaluation framework.

245. For example, a grouping of indicators aimed at addressing context considerations includes "threats" such as (a) inappropriate general resource policy; (b) external threats (e.g. pollution); (c) internal impacts (e.g. agriculture, poaching); and (d) resource extraction (e.g. logging, mining).

*Table 2*

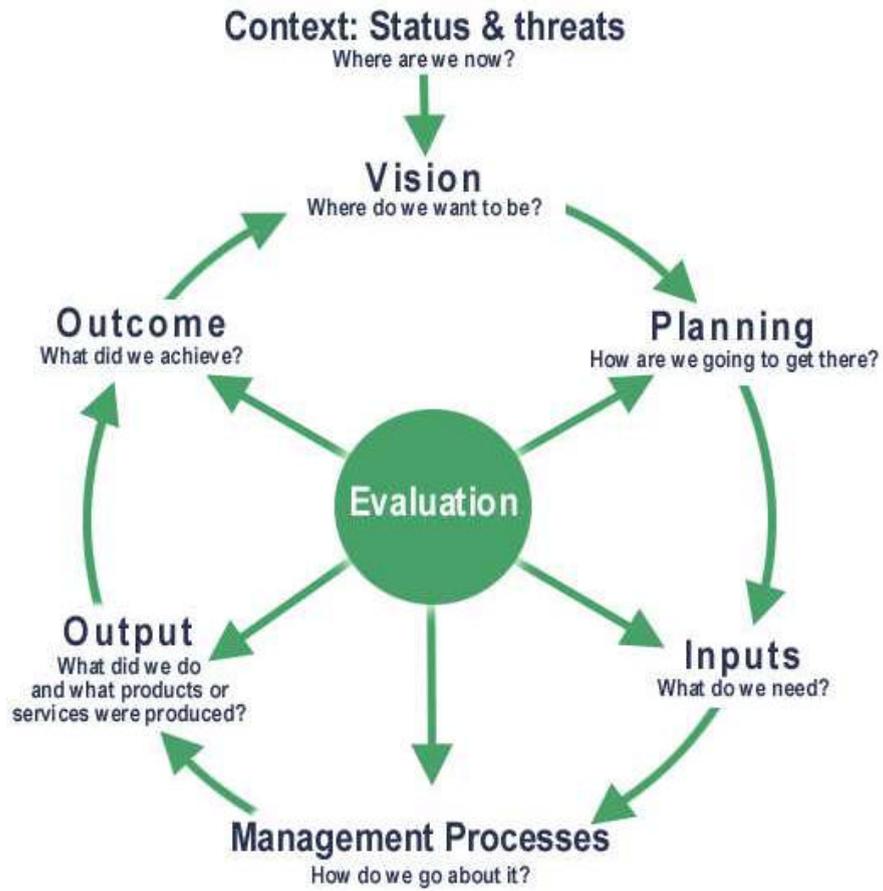
**IUCN framework for assessing management effectiveness of protected areas and protected area systems**

Elements of evaluation	Design issues		Appropriateness of management systems and processes		Delivery of protected area objectives	
	Context	Planning	Inputs	Processes	Outputs	Outcomes
<b>Explanation</b>	Where are we now?  Assessment of importance, threats and policy environment	Where do we want to be?  Assessment of PA design and planning	What do we need?  Assessment of resources needed to carry out management	How do we go about it?  Assessment of the way in which management is conducted	What were the results?  Assessment of the implementation of management programs and actions; delivery of products and services	What did we achieve?  Assessment of the outcomes and the extent to which they achieved objectives
Criteria that are assessed	Significance  Threats  Vulnerability  National context	Protected area legislation and policy  Protected area system design  Reserve design  Management planning	Resourcing of agency  Resourcing of site  Contributions from Partners	Suitability of management processes	Results of management actions  Services and products	Impacts: effects of management in relation to objectives
Focus of evaluation	Status	Appropriateness	Economy	Efficiency Appropriateness	Effectiveness	Effectiveness Appropriateness

Source: Hockings et al. 2000



Figure 3  
The Protected Area Management Cycle and Evaluation



Source: Hockings et al. 2000

246. In comparison, process indicators include aspects related to implementation of the management process such as planning, communication, training, research, reporting, visitor management, conflict management, and budget and financial control.

247. The IUCN Management Effectiveness Framework provides a set of guidelines and an approach for developing systems to assess management effectiveness. It does not, however, provide a detailed methodology for assessment, since the methodologies used in different contexts must be fitted to the purpose and context of a particular evaluation. It differs in kind, therefore, from the context-specific management effectiveness assessment methodologies reviewed below, although many of these were developed using the IUCN framework as the guiding document.

248. The World Heritage Convention, for example, has collaborated with IUCN and other partners to adapt the IUCN Guidelines into a manual and workbook for evaluating management effectiveness at World Heritage sites, under the 4-year (2001-2004) “Enhancing Our Heritage” project funded by the United Nations Foundation<sup>138</sup>.

### ***5.3 The Nature Conservancy Parks in Peril Scorecard and “Measures of Success” methodology***

249. In 1990, The Nature Conservancy launched its Parks in Peril program with the objective of establishing minimal critical management in sixty parks in eighteen countries in Latin America and the Caribbean<sup>139</sup>. The Parks in Peril Scorecard was developed to support and monitor progress in this program. In using this approach, management effectiveness is assessed by scoring management capacity against pre-defined benchmarks on 16 key indicators of protected area functionality. The components of functionality are grouped in four areas:

- Basic protection activities. The indicators in this area are: physical infrastructure, on-site personnel, training, land tenure issues, threats analysis, and official protected areas status.
- Long-term management. The indicators are: zoning and buffer zone management, site-based long-term management plan, conservation science needs assessment, and monitoring plan development and implementation.
- Long-term financing. The indicators in this area are: NGO self-sufficiency plan, and Parks in Peril Site long-term financial plan.
- Site constituency. The indicators are: broad-based management committee/technical advisory committee, community involvement in compatible resource use, development of policy agenda at national/regional/local levels, and environmental education programmes.

250. Each item is assessed on a five-point scale, where 5 = Excellent (proper management of the PA is ensured) and 1 = No work has begun (PA is completely non-functional). Using this methodology allows progress over time to be assessed. The approach focuses on the evaluation of management inputs and processes, rather than conservation outcomes or threat reduction<sup>140</sup>.

251. Building on the Parks in Peril program and its experience in the United States and Asia, TNC developed a systematic methodology for determining measures of conservation success, which it defines as “making substantial progress towards (1) the long-term abatement of critical threats and (2) the sustained maintenance or enhancement of conservation target viability at sites identified for Conservancy Action.” TNC’s framework assesses three general dimensions of success; biodiversity health, threat status and abatement, and conservation capacity, each of which is determined by a set of indicators and a ranking procedure. The framework is an integral

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part of TNC's site-planning methodology, and is discussed in detail in their practitioner's handbook for site conservation planning, discussed above<sup>141</sup>.

#### **5.4 WWF/CATIE protected areas evaluation methodology for Latin America**

252. WWF and the Agricultural Center of Tropical Investigation and Teaching (CATIE) have developed an approach for evaluating and improving the management of protected areas in Latin America. This methodology has been used over a range of protected area categories in countries such as Costa Rica, Ecuador, Guatemala and Brazil, and has been used to evaluate the management effectiveness of a subsystem of protected areas in the Osa Conservation Area of southern Costa Rica. Protected areas management effectiveness may therefore be measured at three levels using this approach: Individual protected areas, systems (or subsystems) of protected areas, and the performance of the protected area administration within its zones of influence<sup>142</sup>.

253. Management indicators are grouped into a number of management fields (ambitos): Administrative; political; legal; planning; knowledge; present use (legal and illegal); management programmes; biographical characteristics; and threats. Although the methodology does not specifically identify indicators that evaluate processes, products, or design aspects of protected areas, there are incorporated in all ten ambitos that affect protected area management.

254. Indicators are tested against conservation objectives for a protected area, and scored on a scale of '0' (unsatisfactory) to '4' (very satisfactory). These scores are then summed for all indicators in each ambito – the total score in each ambito is then compared to an optimal score, providing a basis for assessing management effectiveness. Overall, a protected area obtains a value for its management through the sum of all the values of all the ambitos, expressed as a percentage of the optimal total. In using this system, the effectiveness of various ambitos within a protected area may be assessed, and results may be compared to other protected areas<sup>143</sup>.

#### **5.5 WWF/IBAMA Brazil protected areas effectiveness evaluation**

255. WWF and the Brazilian Environment Institute (IBAMA) set out in 1998 to evaluate 86 protected areas in the country, many of which lacked the financial and human resources needed for effective management. Eight key indicators were selected to measure the implementation of protected area aims. These included: tenure of the land; boundary demarcation; existence of a management plan; presence or absence of illegal activities within the protected area; budget received in relation to budget requested; staff numbers; adequacy of equipment; and adequacy of infrastructure. A further five indicators were selected to measure vulnerability: degree of fragmentation; percentage of degraded land within the protected area; illegal exploitation of resources within the protected area; use of land in the buffer zone; and presence of development projects within the buffer zone.

256. These indicators were assessed through a number of questions and quantitatively scored. Judgments about the degree of implementation of a protected area and its vulnerability were subsequently made on the basis of the average score obtained for relevant questions. Results of the study indicated that 47 of 86 areas were largely unimplemented, while 37 of 86 areas were felt to be vulnerable or highly vulnerable to human activity.

257. The last part of the analysis involved preparing a "risk matrix", whereby 23 percent of sites were determined to be at "extremely high risk" due to high vulnerability and low implementation scores. The indicators selected for this assessment address issues of "requirements" (inputs) and management processes, with some consideration given to threats (context) and outcomes. The results of the evaluation survey directly led to the passing of a government Bill on the establishment of a National System of Protected Areas<sup>144</sup>.

**5.6 WWF/World Bank forest alliance rapid assessment and prioritization methodology**

258. Developed by WWF’s Forest for Life Campaign and the WWF/World Bank Alliance, the Rapid Assessment and Prioritisation of Protected Area Management (RAPPAM) Methodology is intended to provide policy makers with a broad tool for assessing and prioritising forested protected area systems. It is thus intended to serve as an “early-warning” to potential problems and weaknesses in protected areas, and allows for comparisons between protected areas over a range of indicators. It does not, however, attempt to provide for detailed assessments at the site level. The assessment framework contains the following elements:

Context	Planning	Inputs	Processes	Outputs	Outcomes
Biological importance	Legal status	Staff	Training	Education & outreach programmes	PA integrity
	Management planning	Equipment	Supervision		Degree and extent of degradation
Social importance	PA site design	Transport	Data management	Fulfilment of management plan	Community benefits
		Facilities	Research and monitoring		
Threats	PA system design	Funding		Law enforcement	
Vulnerability	Macro policy issues				

259. The evaluation methodology includes a two-part questionnaire. The first part focuses on overall management effectiveness issues, and covers topics such as staffing, transportation and facilities, management planning, research and monitoring, biological importance, socio-economic importance, legal status and security, and the design of both protected area sites and systems. The second part of the questionnaire addresses threats and stresses. Threats are potential or impending stresses in which a detrimental impact has not yet occurred, while stresses are external forces or events that have a detrimental impact on the integrity of the protected area. Within this framework, stresses may include both legal and illegal activities and may result from direct and indirect forces.

260. Analysis of part one of the questionnaire allows administrators and policy makers to a) compare overall effectiveness of each protected area; b) identify broad areas of institutional strengths and weaknesses; and c) identify trends and patterns in protected area management. Analysis of part two of the questionnaire allows for a review of the following:

- Severity of existing degradation. A measure of extent (breadth and degree) and permanence of damage caused by each stress. Each stress may then be plotted to provide a visual presentation of the overall severity of existing degradation at each protected area.
- Severity of potential degradation. A measure of extent of damage, and the permanence of damage likely to be caused by each threat. Each potential stress may then be plotted to provide a visual display of the overall severity of potential degradation at each protected area.

- Comparing threats and stresses. To compare threats across multiple protected areas, the average extent of degradation for all threats, as well as the average degree of permanence for these threats is determined for each site and plotted on a matrix. This provides a visual summary of the severity of threats and stresses across all protected areas.
- Existing and potential loss. This is a combination of the severity of (a) existing degradation and (b) potential degradation for each threat and stress within a protected area. Graphically, the severity of each threat and stress for a protected area may be plotted and visually compared; by summing stresses and threats, the results of a number of protected areas may be plotted and reviewed on the same graph.
- Vulnerability. This measures overall susceptibility or exposure to threats and stresses by a protected area. Vulnerability is a combination of the severity of future degradation from all threats, with the likelihood of any one threat or stress occurring or increasing. These results may also be plotted on a graph.
- Biological and social urgency. This is a measure of how important protected area security and effectiveness is in relation to its biological importance. Conservation urgency may be determined and graphically presented by combining the vulnerability with the biological importance of a protected area.

261. Evaluating management effectiveness using this methodology allows a series of questions to be asked by policy-makers:

- Which protected areas should receive priority?
- Which protected areas are most at risk?
- Which protected areas have strong capacity, and which are weak?
- Which protected areas warrant more detailed, in-depth assessments?
- Which protected areas represent the most strategic conservation investments?
- What are the overall strengths and weaknesses of the protected area system?

262. The RAPPAM methodology has been applied in a number of countries, including Bhutan, China, Russia and South Africa<sup>145</sup>.

263. WWF and the World Bank have also developed a simple “tracking tool” for reporting progress at protected area sites, building on both the WCPA framework and the RAPPAM methodology<sup>146</sup>. The Tracking Tool is designed to be:

- Capable of providing a harmonized reporting system for protected area assessment within both the World Bank and WWF;
- Suitable for replication;
- Able to supply consistent data to allow tracking of progress over time;
- Relatively quick and easy to complete by protected area staff, so as not to be reliant on high levels of funding or other resources;
- Capable of providing a “score” if required;
- Easily understood by non-specialists; and
- Nested within existing reporting systems to avoid duplication of effort.

**5.7 International Marine Protected Area Management Effectiveness Initiative**

264. While a number of guides to marine protected area (MPA) planning and management deal in part with evaluating management effectiveness<sup>147</sup>, the most comprehensive resource on this topic is a new guidebook developed by WCPA, WWF and the United States National Oceanic and Atmospheric Administration (NOAA)<sup>148</sup>. The purpose of the guidebook is to assist managers and other conservation practitioners to evaluate and adaptively improve the effectiveness of MPA implementation and management. Building on the IUCN Framework for Assessing Management Effectiveness discussed above, this framework sets out 44 indicators covering 11 biophysical, 17 socio-economic and 16 governance performance dimensions of MPA management (See Box 12). These indicators have benefited from pilot testing in a wide range of MPAs around the world.

265. The indicators support a series of goals and objectives that have been defined for each of the three categories. For example, one of the five goals of the biophysical category is “to protect biodiversity”, while one of the objectives under this goal is “to minimize threats and damage due to human activities inside and/or outside the MPA”. An indicator to assess progress against this objective would be Area under reduced human use/impact.

266. The methodology also provides a full set of questions to be asked for each indicator with regards to such aspects as objectives assessed, difficulty of measurement, resources required to measure the indicator, how data is collected and results shared, and outputs expected from the indicator assessment. Answering these questions allows many indicators to be “scored”, thereby providing for quick analysis and the eventual establishment of trend data.

For example, in assessing habitat complexity (Biophysical Indicator 5), a score of 1 indicates that the complexity of habitats within the MPA are in notable decline (reductions > than or equal to 20% in area and/or degraded quality of habitat), while a score of 5 indicates that the complexity of habitats within the MPA are improving notably (increases greater than or equal to 20% in area and/or “ideal” quality of habitat).

**Box 12**

**MPA management effectiveness indicators**

Biophysical (11)	Socio-economic (17)	Governance (16)
1. Focal species abundance 2. Focal species viability 3. Community composition & structure 4. Community viability 5. Habitat complexity & integrity 6. Food web integrity 7. Water quality 8. Return on fishing effort 9. Area restored 10. Area under reduced human use/impact 11. Area free from extraction	1. Household perceptions of the availability of local seafood 2. Local fisher perceptions of catch 3. Material style of life of households 4. Community infrastructure 5. Household occupational structure 6. Number & nature of markets 7. Availability of health services 8/9. Perceptions of non-market & non-use values of MPA 10. % of particular group in leadership positions 11. Local use patterns 12. Local attitudes & beliefs regarding the resources 13. Changes in conditions of ancestral & historical sites/ features/monuments 14. Community knowledge of natural history 15. Level of understanding of human	1. Existence of management plan & adoption of plan 2. Understanding of MPA rules/ regulations by the community 3. Existence of decision-making & management body with relevant mandate to make decisions 4. Existence & compatibility of legislation with needs of the MPA management plan 5. Degree of stakeholder participation in management of MPA 6. Level of satisfaction of stakeholders with participation 7. The amount & quality of training provided to resource users to participate in MPA management 8. Amount & quality of training provided to community organisations to participate in MPA management 9. Community organisation formed and active 10. Available human resources & equipment for surveillance & monitoring

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	impacts (including population) on resource 16. Distribution of scientific knowledge to the community 17. Income distribution by source by household	11. Clearly defined enforcement procedures 12. Number of patrols per time period 13. Effective education programme on compliance for stakeholders 14. Regular meeting of MPA staff with stakeholders 15. Number of people trained in sustainable resource use 16. Number of stakeholders involved in surveillance, monitoring & enforcement
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Source: Pomeroy et al. 2003.

267. The Guidebook recommends that the evaluation process proceed in four steps:

(a) *Step 1.* Select the appropriate set of indicators to measure. This is primarily based on priority goals and objectives for the site under consideration, subsequently cross-referenced with the goals, objectives and indicators listed for the three categories of indicator in the methodology.

(b) *Step 2.* Plan for how to evaluate the indicators selected. This step involves: (a) assessing necessary resources needed to carry out the evaluation; and (b) developing an evaluation work plan.

(c) *Step 3.* Implement the evaluation, and collect, manage and analyze data related to the selection of indicators. (Appendix I of the report provides detailed guidelines on collecting and analyzing data for each indicator.)

(d) *Step 4.* Share and adapt to the results generated. Considered the most important part of the assessment, the two fundamental aspects to this step are: (a) sharing results with identified target audiences in an appropriate manner; and (b) encouraging the adaptation of management practices necessary to improve MPA use.

*Annex I*

**POSSIBLE ELEMENTS FOR A CBD PROGRAMME OF WORK ON PROTECTED AREAS**

Bearing in mind the three objectives of the Convention and the need to approach work on protected areas in a balanced manner that pays due attention to conservation, sustainable use, and the equitable sharing of benefits arising from the utilization of genetic resources, the Parties may wish to establish the following programme of work on protected areas:

1. Establish time-bound, quantitative targets for protected areas linked to the COP6/WSSD 2010 Target of significantly reducing biodiversity loss: Parties at COP7 will likely reaffirm their commitment to the 2010 target and make specific commitments to realizing it through the expansion and strengthening of a global, representative network of protected areas. As one strategy for achieving this target, Parties may wish to commit to:
  - a. Conduct national-level analyses of options for setting time-bound, quantitative protected areas targets, based on biodiversity criteria such as presence of unique and threatened species and coverage of representative samples of ecosystems and habitats, with specific indicators and milestones of progress; and
  - b. Establish a mechanism, within the CBD process, for monitoring progress towards these targets and assessing their implications at the global level.
2. Strengthen the protected areas elements of National Biodiversity Strategies and Action Plans (NBSAPs). Parties may wish to commit to strengthening the protected areas planning and management elements of their NBSAPs by applying the best current conservation science and management approaches, in partnership with intergovernmental and nongovernmental organizations possessing relevant expertise. To that end, Parties may wish to commit, by 2010 or earlier, to:
  - a. Establish or complete national, representative protected area systems which conserve representative samples of major ecosystems, protect unique natural phenomena and conserve ecosystem services. To achieve this objective, Parties may find it useful to use ecoregional planning methods to select sites based on conservation targets (e.g. protection of viable populations of endemic and threatened species; protection of functional coastal mangroves; maintenance of hydrological systems). These exercises should:
    - Adopt ecosystem (i.e. bioregional/landscape/ecoregional) approaches through which protected areas are selected according to their added conservation value to the system;
    - Establish biological corridors to link protected areas in common ecoregions to allow for species migration and adaptation to global change, and conduct ecological restoration activities as necessary;
    - Take into account dynamic processes such as global climate change;
    - Reflect the full variety of protected areas governance systems, including management by governments, communities, the private sector, non-governmental organizations, or co-management by joint arrangements among these actors;

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- Include cultural and sustainable use considerations;
  - Utilize participatory planning approaches;
  - Establish, as necessary, partnerships with relevant intergovernmental, nongovernmental and indigenous organizations and local and indigenous communities; and
  - Draw on both the best current scientific methodologies and customary practices of local and indigenous communities.
- b. Conduct valuation studies at the national level to assess the benefits to human well-being of the national protected area system, and incorporate natural resources into national accounting procedures to monitor changes in the “stocks” of natural resources, in order to inform decision-making on protected areas management and ensure that biodiversity concerns are integrated into natural resource-using sectoral strategies such as agriculture, forestry and fisheries. Such studies should assess socio-cultural benefits of protected areas as well as their economic values
- c. Apply a systematic approach to planning conservation activities at the site level, incorporating, at a minimum, four major elements:
- Identification of conservation targets;
  - Identification of major threats, covering both proximate stresses and underlying sources;
  - Identification of threat abatement strategies; and
  - Development of management effectiveness indicators to monitor progress.

Site-level planning and management should be implemented utilizing participatory approaches and seek, wherever possible, to both meet conservation and sustainable development objectives, including support for the cultural identity and livelihoods of local and indigenous communities.

- d. Where ecosystems, habitats, the range of species and migration patterns cross national boundaries, endeavor to institute transnational cooperative initiatives to manage and link protected areas networks across borders, including the establishment, as appropriate, of transboundary protected areas.

3. Ensure adequate and sustainable financing for conservation of protected areas. Parties may wish to commit to increasing their level of direct financing of protected areas, and to incorporating protected areas financing into the mainstream of development financing. In line with their endorsement of the WSSD Johannesburg Plan of Implementation, which calls for new and additional financial resources to meet the 2010 target of significantly reducing the rate of biodiversity loss, developed Country Parties may wish to increase their commitment to financing the establishment and management of protected areas and protected areas networks in developing country Parties and Parties with economies in transition. Specifically, Parties may wish to:

- a. Direct the Global Environment Facility (GEF) to take the following actions:
- Maintain or increase financial allocations to protected areas compared with historical levels of GEF funding.

- Establish a new, dedicated “2010 Target” funding window to support achievement of the 2010 Target activities outlined above, through a second phase of NBSAP development to focus on protected area system definition and establishment, national-level studies of economic and socio-cultural values of protected areas, policy, institutional and human resources capacity development, establishment of sustainable protected areas financing plans and mechanisms, and development of an effective system for monitoring and reporting on national progress in achieving the 2010 Target.
  - Carry out an in-depth study of options for how GEF resources, for the current and future replenishment periods could have a much greater conservation impact, by inter alia leveraging greater volumes of public and private resources, offering recognition and support to community conserved areas, catalyzing financial sustainability for protected area systems, experimenting with new public/private co-management partnerships for conservation on both public and private land, and encouraging relevant policy and institutional reforms.
- b. Call on multilateral, bilateral and private donor agencies and institutions to establish a “2010 Target Funding Programme” to support achievement of the 2010 Target activities outlined above in developing countries and countries with economies in transition.
- c. Commit to the establishment of sustainable financing schemes for national systems of protected areas by 2010 or earlier, including necessary regulatory, legislative and other measures. To develop the capacity necessary to do so, developing country Parties and Parties with economies in transition may wish to draw on the expertise and resources of the numerous UN agencies, multilateral and bilateral aid agencies and non-governmental organizations which are members of the Conservation Finance Alliance.
- e. Call on all relevant UN organizations, international financial institutions, governments, donor agencies and non-governmental organizations to recognize that strengthening and maintenance of representative systems of protected areas and the ecosystem services that they provide is an essential element of a sustainable strategy to achieve the Millennium Development Goals (MDGs). To this end, Parties should commit, by 2010 or earlier, to specifically incorporating protected areas into their mainstream development planning and financing processes.
- f. Request the Secretariat to establish a formal mechanism of cooperation through which the CBD can play a leading role in elaborating and implementing progress towards MDG Indicator 26 (“land protected to maintain biological diversity”) under MDG 7 (“ensure environmental sustainability”), including determining the financial and other requirements for making progress under Indicator 26.
- g. Commit to providing more detailed information on national protected areas financing through Parties’ National Reports to the CBD, and strengthen the role of the Secretariat in collecting and sharing information about protected areas

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financing, in collaboration with other relevant mechanisms such as the World Database on Protected Areas.

4. Adopt and implement a system of criteria and indicators for evaluating and reporting on protected areas management effectiveness: Bearing in mind the utility of an objective, scientifically-based set of criteria and indicators for monitoring and measuring the effectiveness of protected areas management, in order to identify areas for improvement and provide justification for increased financial and policy support, Parties may wish to commit to adopting, implementing, reporting on, and sharing information on measures to evaluate protected areas management effectiveness. To that end, Parties may wish to:
  - a. Adopt and implement by 2010 best practice systems of assessing protected areas management effectiveness at site and national system levels, drawing on, inter alia, the best practice framework for evaluating protected areas management effectiveness developed by the IUCN World Commission on Protected Areas, and related work of relevant national and international organizations.
  - b. Commit to carrying out management effectiveness evaluations of at least 30 percent of each Party's protected areas by 2010.
  - c. Include information resulting from protected area management effectiveness evaluations in National Reports to the CBD;
  - d. Request the Secretariat, in collaboration with the IUCN World Commission on Protected Areas, the UNEP World Conservation Monitoring Centre, and other relevant organizations, to assemble a database of protected area management effectiveness assessment initiatives and experts, and make this information available to Parties, protected area management agencies, non-governmental organizations, and other relevant institutions.
5. Identify and implement policy reforms, including use of economic valuation and incentives, to provide a supportive enabling environment for more effective development and management of protected areas and protected areas systems. Bearing in mind that the effectiveness of protected areas is heavily dependent on the nature of policies and economic incentives, Parties may wish to commit, by 2010, to:
  - a. Integrate the use of economic valuation tools into national planning processes in order to identify the hidden economic benefits provided by protected areas;
  - b. Identify and removing perverse incentives that increase pressure on protected areas, or mitigating their perverse effects;
  - c. Identify and establishing positive incentives that support the integrity and maintenance of protected areas;
  - d. Assess the economic and socio-cultural costs arising from the establishment and maintenance of protected areas, particularly for indigenous and local communities, and adjust policies to ensure that such costs – including the costs of livelihood opportunities foregone – are equitably compensated.

- e. Establish policies and institutional mechanisms to facilitate the legal recognition and effective management of indigenous protected areas and community conserved areas in a manner consistent with the goals of conserving both biodiversity and the knowledge, innovations and practices of indigenous and local communities.
  - f. Develop national incentive mechanisms and institutions to support the establishment of biodiversity conservation areas on private lands, including private reserves, and conservation easements which achieve biodiversity conservation goals in the managed landscape surrounding formal protected areas.
  - g. Identify and foster economic opportunities and the creation of markets for goods and services produced by protected areas and/or reliant on the ecosystem services that protected areas provide.
  - h. Establish adequate national policies to deal with access to genetic resources within protected areas and benefits arising from their utilization, drawing on the CBD Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization.
6. Mobilize a comprehensive programme to significantly increase capacities for protected area system development and management in developing countries and countries with economies in transition by 2010. Bearing in mind that attaining the CBD/WSSD target of significantly reducing biodiversity loss by 2010 will require a greatly enhanced effort to strengthen capacity for protected areas development and management in developing countries and countries with economies in transition, Parties may wish to commit to a comprehensive effort in this regard, and to urge relevant organizations to join them.

Such an initiative should encompass capacity development at individual, institutional and systemic levels, including (i) enhancing the knowledge, skills and competencies of individuals involved in protected areas management; (ii) establishing and ensuring adequate political, financial and technical support for institutions, both governmental and non-governmental, with responsibilities for protected areas management; and (iii) developing an enabling policy environment through development of appropriate policy and legal frameworks and mechanisms, and through strengthening of societal awareness of and support for the role of protected areas in conserving biodiversity, providing ecosystem services. Areas where capacity development is most urgently needed include:

- Protected area systems and site planning;
- Participatory processes to engage all relevant stakeholders in protected area establishment and management;
- Co-management and community-based conservation approaches, including demarcation, mapping and biological inventories of community conserved areas;
- Scientific assessment and monitoring;
- Protected area surveillance and enforcement;
- Ecotourism development and management;
- Financial management and revenue generation;
- Public awareness and education;
- Assessment of management effectiveness; and
- General capacities for day-to-day protected area management and administration.

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In addition to protected areas management agencies, capacity-building initiatives should target local and indigenous communities and local government agencies, and should draw on centers of expertise including non-governmental organizations and scientific and educational institutions.

In order to mobilize a comprehensive initiative to address these capacity development needs, Parties may wish to:

- a. Carry out national protected areas capacity assessments, including all elements of capacity identified above, and incorporate the resulting information into National Reports to the CBD;
  - b. Instruct the GEF to incorporate the specific needs for capacity development identified above into its programmes and projects related to protected areas and biodiversity in general, and to provide support to developing countries Parties and Parties with economies in transition to carry out national protected areas capacity assessments;
  - c. Invite other donor institutions to collaborate with the GEF in mobilizing and implementing a coordinated strategy to significantly increase financing for protected areas capacity development;
  - d. Request the Secretariat to seek convene an international conference of governments, protected areas experts and relevant international organizations, donor agencies, non-governmental and indigenous organizations to design and launch a "Protected Areas Capacity 2010" initiative, no later than the end of 2004.
  - e. Invite developed country parties and other donor agencies to support the convening of the "Protected Areas Capacity 2010" conference.
7. Ratify and implement global and regional conventions, agreements and programmes dealing with protected areas, and identify and foster synergies among them. Parties may wish to call upon Parties and governments to ratify and implement relevant global and regional agreements pertaining to protected areas. In addition, Parties may wish to request the Secretariat of the CBD to initiate dialogue with the Secretariats of other relevant conventions related to protected areas in order to identify further modes of collaboration and foster synergies among them.
8. Develop voluntary protected areas minimum standards and best practice guidelines. In order to provide guidance and assistance to Parties in fulfilling their protected areas obligations under the Convention, the Parties may wish to institute a process for the development of a voluntary, international framework of minimum standards and best practice guidelines for the establishment and management of protected areas and protected areas networks. Such a framework might focus on, inter alia, system and site planning, protected areas governance, participatory processes, management, financing, genetic resources access and benefit-sharing policies, and measures for evaluating effectiveness. In developing this framework, Parties may wish to follow the procedural model utilized in the development of the CBD Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization.

9. Establish, within the framework and institutions of the Convention, mechanisms to assist in implementing the Protected Areas Programme of Work. In order to implement the Protected Areas Programme of Work, Parties may wish to establish an Open Ended Working Group on Protected Areas. The Working Group might meet at least once before COP8 to address outstanding issues and prepare a report to COP8 on progress in the implementation of the Programme of Work. Specifically, the Working Group would be requested to develop the “voluntary protected areas standards and best practice guidelines” discussed above, drawing on the input of Parties and governments, the work of relevant United Nations organizations and conventions, the work of the World Commission on Protected Areas, the outcomes and recommendations of the Fifth IUCN World Congress on Protected Areas, and the work of relevant non-governmental and indigenous organizations.

*Annex II***ENVIRONMENTAL AGREEMENTS ENCOURAGING PROTECTION OF LAND AND SEA AREAS FOR NATURE CONSERVATION\***

\* Does not include bilateral agreements, such as those concerning transboundary protected areas.

Notes: 1 – Text encourages states either directly or in equivalent language to establish protected areas; 2 – Text establishes a defined form of protected area (specific to that convention or agreement); 3 – Encourages protection of areas but such areas not in accordance with the IUCN protected areas categories; 4 – General text simply exhorts environmental protection, often linked to protocols or other measures which require designation of protected areas; 5 – Text specifies a list of sites

Short Title	Title	Place of Adoption	Year of Adoption	Notes
London Convention	Convention relative to the Preservation of Fauna and Flora in their Natural State	London	1933	1
Western Hemisphere Convention	Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere	Washington	1940	1
	International Convention for the Regulation of Whaling	Washington	1946	3
	International Convention for the Protection of Birds	Paris	1950	1
	European Diploma: Resolutions of the Committee of Ministers of the Council of Europe*		1965	2
African Convention	African Convention on the Conservation of Nature and Natural Resources	Algiers	1968	1
	Man and the Biosphere Programme*		1970	2
	Statutory Framework of the World Network of Biosphere Reserves	Seville	1995	2
Ramsar Convention	Convention on Wetlands of International Importance especially as Waterfowl Habitat	Ramsar	1971	2
World Heritage Convention	Convention concerning the Protection of the World Cultural and Natural Heritage	Paris	1972	2
Barcelona Convention	Convention for the Protection of the Mediterranean Sea against Pollution	Barcelona	1976	
SPA Protocol	Protocol concerning Mediterranean Specially Protected Areas	Geneva	1982	2
SPA and Biodiversity Protocol	Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean	Barcelona	1995	2
	Convention on Conservation of Nature in the South Pacific	Apia	1976	
	The European Network of Biogenetic Reserves : Resolutions of the Committee of Ministers Council of Europe*		1976	2
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto		1978	3
Kuwait Convention	Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution		1978	4
Bern Convention	Convention on the Conservation of European Wildlife and Natural Habitats	Bern	1979	1
Wild Birds Directive	Council Directive on the conservation of wild birds (EU)		1979	2
Bonn Convention	Convention on the Conservation of Migratory Species of Wild Animals	Bonn	1979	
	Agreement on the Conservation of African-Eurasian Migratory Waterbirds	The Hague	1995	1
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources	Canberra	1980	1
	European Outline Convention on Transfrontier Co-operation between Territorial Communities or Authorities	Madrid	1980	
Abidjan Convention	Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region		1981	4
Lima Convention	Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific		1981	4
	Protocol for the Conservation and Management of Protected Marine and Coastal Areas of the South-East Pacific	Paipa (Colombia)	1989	2
	Benelux Convention on Nature Conservation and Landscape Protection	Bruxelles	1982	
UNCLOS	United Nations Convention on the Law of the Sea	Montego Bay	1982	1
Jeddah Convention	Regional Convention for the Conservation of the Red Sea and Gulf of Aden Environment		1982	4
Cartagena	Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region	Cartagena de Indias	1983	

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Short Title	Title	Place of Adoption	of Adopted	Notes
Convention	Caribbean Region	Indias (Colombia)		
SPAProtocol	Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region	Kingston	1990	2
	ASEAN Declaration on Heritage Parks and Reserves	Bangkok	1984	5
Nairobi Convention	Convention for the Protection , Management and Development of the Marine and Coastal Environment of the Eastern African Region	Nairobi	1985	
	Protocol concerning Protected Areas and Wild Fauna and Flora in the Eastern African Region	Nairobi	1985	2
	ASEAN Agreement on the Conservation of Nature and Natural Resources	Kuala Lumpur	1985	1
Noumea Convention	Convention for the Protection of Natural Resources and Environment of the South Pacific Region		1986	4
The Antarctic Treaty	The Antarctic Treaty	Washington	1959	3
	Agreed Measures for the Conservation of Antarctic Fauna and Flora	Brussels	1964	3
	Protocol to the Antarctic Treaty on Environmental Protection	Madrid	1991	3
	Convention for the Conservation of the Biodiversity and the Protection of Wilderness Areas in Central America	Managua	1992	
Convention on Biological Diversity	Convention on Biological Diversity	Rio de Janeiro	1992	1
Habitats Directive	Council Directive on the conservation of natural habitats of wild fauna and flora (EU)		1992	2
Bucharest Convention	Convention on the Protection of the Black Sea Against Pollution		1992	4
OSPAR Convention	The Convention for the Protection of the Marine Environment of the North-East Atlantic - Oslo and Paris conventions		1992	4
Helsinki Convention	Convention on the Protection of the Marine Environment of the Baltic Sea Area	Helsinki	1992	4
	Agreement on the Preparation of a Tripartite Environmental Management Programme for Lake Victoria	Dar-es-Salaam	1994	
European Landscape Convention	European Landscape Convention (Council of Europe)	Florence	2000	1

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## ENDNOTES

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<sup>1</sup> Members of the liaison group established by the Secretariat to provide input for and review of the Secretariat's documents on protected areas for the 7<sup>th</sup> Conference of the Parties, 9<sup>th</sup> meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), and the Ad Hoc Technical Experts Group on Protected Areas (AHTEG) include: IUCN, WCPA, MAB, the Ramsar Convention Secretariat, the UNESCO World Heritage Convention Secretariat, Birdlife International, TNC, UNEP-WCMC, WRI, WWF International, Conservation International, the Convention on Migratory Species Secretariat, the Swedish Scientific Council on Biodiversity, the United Nations University Institute of Advanced Studies, and an indigenous representative.

<sup>2</sup> CBD Decision IV/5, annex.

<sup>3</sup> CBD Decision IV/4, annex I.

<sup>4</sup> CBD Decision IV/4, paragraph 4.

<sup>5</sup> CBD Decision V/23, annex I, II, part B, activity 7(a).

<sup>6</sup> CBD Decision V/16, annex, part II, task 2.

<sup>7</sup> Resolution No. 713 of the 27th Session of the United Nations Economic and Social Council:

“*Noting* that...national parks and reserves...contribute to the inspiration, culture and welfare of mankind, *Believing* that these national parks are valuable for economic and scientific reasons and also as areas for the future preservation of fauna and flora and geologic structures in their natural state, 1) *Requests* the Secretary-General to establish, in co-operation with UNESCO, FAO and other interested specialist agencies, a list of national parks and equivalent reserves, with a brief description of each... 2) *Invites* State Members...to transmit...a description... 3) *Furthermore invites* the International Union for Conservation of Nature and Natural Resources and other interested non-governmental organisations in consultative status to assist...in the preparation of the proposed list”.

<sup>8</sup> IUCN 1994.

<sup>9</sup> Pressey 1994.

<sup>10</sup> See for example: Castro Parga *et al.* 1996; Williams *et al.* 1996; Nantel *et al.* 1998; Scott *et al.* 2001.

<sup>11</sup> IUCN (1971) United Nations List of National Parks and Equivalent Reserves. Hayez, Brussels:

**National Park:** An area of part of the national territory which 1) the *central* governmental authority 2) has so ordered that the three basic conditions of our classification are fulfilled: a) status of general protection, b) size in excess of a certain minimum, c) protected status adequately maintained, and 3) in which that authority permits or actually organizes tourism.

**Equivalent Reserve:** Other areas that the three basic conditions of the classification are also fulfilled and which may be either 1) Strict Natural Reserves, when tourism is not permitted, or 2) when their status is not derived from the central governmental authority, State Parks, Provincial, Cantonal or other Local Authority Reserves, or Private Reserves belonging to non-governmental associations.

<sup>12</sup> IUCN/CNPPA (1978) Categories, objectives and criteria for protected areas. IUCN, Switzerland:

Category I: Scientific Reserve/Strict Nature Reserve

Category II: National Park

Category III: Natural Monument/Natural Landmark

Category IV: Nature Conservation Reserve/Managed Nature Reserve/Wildlife Sanctuary

Category V: Protected Landscape or Seascape

Category VI: Resource Reserve

Category VII: Anthropological Reserve/ Natural Biotic Area

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Category VIII: Multiple Use Management Area/Managed Resource Area  
Category IX: Biosphere Reserve  
Category X: World Heritage Site (natural)

<sup>13</sup> IUCN, 1994.

<sup>14</sup> <http://www.cf.ac.uk/cplan/sacl/>

<sup>15</sup> For analyses of the values of protected areas, see: Munasinghe and McNeely 1994; Dixon and Sherman 1990.

<sup>16</sup> UNDP, UNEP, World Bank and WRI, 2000. (2000). *World Resources 2000-2001: People and Ecosystems: The Fraying Web of Life*. World Resources Institute, Washington DC.

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<sup>17</sup> <http://www.millenniumassessment.org/en/index.htm>

<sup>18</sup> Costanza 1997.

<sup>19</sup> See, for example, Daily 2000.

<sup>20</sup> Balmford *et al.* 2002.

<sup>21</sup> IUCN 1998.

<sup>22</sup> Costanza *et al.* 1997.

<sup>23</sup> See, for example: Daily 2002; Harris and Frazer 2002; Vincent 2000; Bartelmus 1999; Lutz 1993.

<sup>24</sup> On the tourism values of protected areas, see Eagles *et al.* 2002.

<sup>25</sup> Gell and Roberts. 2002.

<sup>26</sup> On the commercial value of wild genetic resources, see Laird and ten Kate 1999. Concerning “bioprospecting” in protected areas, see Laird and Lisinge 2002.

<sup>27</sup> Intergovernmental Panel on Climate Change 2002; Bennett 1999.

<sup>28</sup> For extensive discussion on non-material values of protected areas, see Putney 2000.

<sup>29</sup> For an extensive review of the cultural and spiritual values of biodiversity, see Posey 1999.

<sup>30</sup> IUCN, 1999.

<sup>31</sup> The IUCN survey covered Brazil, China, Gabon, Indonesia, Mexico, Papua New Guinea, Peru, Russia, Tanzania and Vietnam.

<sup>32</sup> Van Schaik *et al.*, 1997.

<sup>33</sup> Burke *et al.* 2002.

<sup>34</sup> The Nature Conservancy. 2000.

<sup>35</sup> Wood *et al.* 2000.

<sup>36</sup> Davey 1998.

<sup>37</sup> Carey *et al.* 2000.

<sup>38</sup> WRI *et al.* 1992.

<sup>39</sup> Balmford *et al.* 2002.

<sup>40</sup> Van Schaik *et al.*, 1997. The direct threats considered in this study included agricultural encroachment, hunting/fishing, logging/fuelwood collection, grazing of livestock, mining, fires, road-building and hydropower development.

<sup>41</sup> Carey *et al.* 2000.

<sup>42</sup> Bruner *et al.* 2001.

<sup>43</sup> Redford *et al.* 2003.

<sup>44</sup> Redford *et al.* 2003.

<sup>45</sup> Bennett 1999.

<sup>46</sup> Redford and Richter 1999.

<sup>47</sup> Phillips 2002.

<sup>48</sup> Concerning integrated conservation and development projects (ICDPs), see: Mogelgaard, 2003; Hughes and Flintan, 2001; Wells and Brandon, 1992; Brown and Wyckoff-Baird, 1992.

<sup>49</sup> UNEP/CBD/WS-Sustainable Use/4/2

<sup>50</sup> Miller 1989.

<sup>51</sup> Johnson 1995.

<sup>52</sup> Mittermeier *et al.* 1998.

<sup>53</sup> Brooks *et al.* 2002. See also Myers *et al.* 2000.

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- <sup>54</sup> Roberts *et al.* 2002.
- <sup>55</sup> Mittermeier *et al.* 1998.
- <sup>56</sup> Olson and Dinerstein 1998.
- <sup>57</sup> <http://www.ramsar.org>. Accessed April 18, 2003.
- <sup>58</sup> Spalding 2002.
- <sup>59</sup> Bridgewater 2002.
- <sup>60</sup> Bryant *et al.* 1997.
- <sup>61</sup> Birdlife International, 2002.
- <sup>62</sup> Mallari *et al.* 2001.
- <sup>63</sup> See, for example: Gaston *et al.* 2002; Sarkar and Margules 2002; Williams *et al.* 2002; Margules *et al.* 2002; Justus and Sarkar 2002; Margules and Pressey 2000; Pressey 1998.
- <sup>64</sup> Finkel 1998.
- <sup>65</sup> Cowling *et al.* 2003; Pressey *et al.* 2003.
- <sup>66</sup> Davey 1998.
- <sup>67</sup> Groves *et al.* 2002. See also Groves *et al.* 2000.
- <sup>68</sup> Groves *et al.* 2002.
- <sup>69</sup> Groves *et al.* 2000.
- <sup>70</sup> Davey 1998.
- <sup>71</sup> The Nature Conservancy 2000.
- <sup>72</sup> Nicoll 2002.
- <sup>73</sup> The Nature Conservancy nd.
- <sup>74</sup> Birdlife International 2001.
- <sup>75</sup> Borrini-Feyerabend 1995.
- <sup>76</sup> For an extensive library and links on participatory rural appraisal methods, see <http://www.eldis.org/participation>; For information on community mapping methods, see Poole 1995 and Momberg *et al.* 1996.
- <sup>77</sup> Dupar and Badenoch 2002; Ribot 2002; Wycoff-Baird *et al.* 2000; Lutz and Caldecott 1997.
- <sup>78</sup> Borrini-Feyerabend *et al.* 2000.
- <sup>79</sup> Borrini-Feyerabend 1996.
- <sup>80</sup> See McNeeley 1995; Western and Wright 1994. For analysis of marine protected area co-management, see: Parks and Salafsky 2001; Pomeroy *et al.* 1998; White *et al.* 1994; and the links and resources available from the Locally Managed Marine Area Network at <http://www.lmmanetwork.org>.
- <sup>81</sup> Worah 2002.
- <sup>82</sup> Worah 2002.
- <sup>83</sup> Wells *et al.* 1999.
- <sup>84</sup> Colchester nd.
- <sup>85</sup> Adams and McShane 1992.
- <sup>86</sup> For numerous examples of indigenous perspectives on nature and natural resources, see Kemf 1993.
- <sup>87</sup> Beltran 2000.
- <sup>88</sup> Beltran 2000.
- <sup>89</sup> Forest Peoples Project 2003.
- <sup>90</sup> Borrini-Feyerabend 2003.
- <sup>91</sup> Borrini-Feyerabend 2003.
- <sup>92</sup> McNeely 1999.
- <sup>93</sup> Rice 2002.
- <sup>94</sup> For information on The Nature Conservancy's "conservation concession" initiative at Komodo National Park in Indonesia, see <http://www.komodonationalpark.org>.
- <sup>95</sup> Sandwith *et al.* 2001.
- <sup>96</sup> Sandwith *et al.* 2001.
- <sup>97</sup> Zbicz 2001
- <sup>98</sup> See, for example Oglethorpe 2002 and Margoluis and Salafsky 1998.
- <sup>99</sup> Appleton *et al.* 2003.
- <sup>100</sup> Balmford *et al.* 2002.
- <sup>101</sup> Panayotou and Glover 1995.
- <sup>102</sup> Balmford *et al.* 2002.

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- <sup>103</sup> Balmford *et al.* 2002.
- <sup>104</sup> Pimm *et al.* 2001.
- <sup>105</sup> James *et al.* 1999.
- <sup>106</sup> OECD 2002.
- <sup>107</sup> UNEP/CBD/COP/6/9
- <sup>108</sup> Global Environment Facility 2001.
- <sup>109</sup> GEF 2003.
- <sup>110</sup> Personal Communication, Boni Biagini and Josh Brann, Global Environment Facility, May 2003.
- <sup>111</sup> Global Environment Facility 2002.
- <sup>112</sup> Global Environment Facility 2003.
- <sup>113</sup> Personal Communication, Sheldon Cohen, Director of Conservation Finance and Policy, The Nature Conservancy, April 23, 2003.
- <sup>114</sup> For comprehensive information on conservation trust funds, see Bayon *et al.* 1999 and Norris 2000.
- <sup>115</sup> Cullen *et al.* 2002.
- <sup>116</sup> IUCN and WBCSD 2002.
- <sup>117</sup> Wood *et al.* 2000.
- <sup>118</sup> Concerning climate change-related carbon sequestration and its relationship to biodiversity conservation, see Smith and Scherr 2002, and Orlando *et al.* 2002.
- <sup>119</sup> The full contents of the Conservation Finance Alliance's *Training Guide for Conservation Finance Mechanisms* can be downloaded from <http://www.conservationfinance.org>. The guide contains an extensive bibliography.
- <sup>120</sup> Examples in the section are drawn from Spergel 2001.
- <sup>121</sup> See, for example: Mainka and Tivedi 2002; The European Commission and IUCN 2001; Koziell 2001; and the presentations and papers from the meeting "Biodiversity After Johannesburg: The Critical Role of Biodiversity and Ecosystem Services in Achieving the Millennium Development Goals" at <http://www.undp.org/equatorinitiative/secondary/biodiversity.htm>.
- <sup>122</sup> Bruner *et al.* 2001.
- <sup>123</sup> Cifuentes *et al.* 2000.
- <sup>124</sup> Kelleher *et al.* 1995.
- <sup>125</sup> See for example, Salm and Clark 2000.
- <sup>126</sup> See, for example, Pomeroy *et al.* 2002; Jameson *et al.* 2002.
- <sup>127</sup> Report of the *Ad Hoc Technical Expert Group on Marine and Coastal Protected Areas*. UNEP/CBD/SBSTTA/8/INF/7. 13 February 2003.
- <sup>128</sup> Concerning the debate over "no-take" marine reserves, see Agardy *et al.* 2003.
- <sup>129</sup> Margoluis and Salafsky 1998; Hockings and Phillips, 1999; Hockings *et al.*, 2000.
- <sup>130</sup> Hockings *et al.* 2000.
- <sup>131</sup> Hockings *et al.* 2000.
- <sup>132</sup> In the UK, the Countryside Council for Wales developed an approach for monitoring Sites of Special Scientific Interest (SSSIs), closely tied to planning and management systems (Alexander and Rowell 1999). In Australia, the Great Barrier Reef Marine Park Authority and the Australian Institute of Marine Science established a programme of long-term monitoring for the Great Barrier Reef (Sweatman 1997). Both of these approaches were restricted, however, to monitoring of biological indicators.
- <sup>133</sup> See, for example: Kothari *et al.* 1989; Edwards 1991; WWF and the Department of Environment and Conservation of Papua New Guinea 1992; Environment and Development Group, 1997.
- <sup>134</sup> IUCN 1998a.
- <sup>135</sup> McNeely *et al.* 1994.
- <sup>136</sup> MacKinnon 1997.
- <sup>137</sup> Hockings *et al.* 2000.
- <sup>138</sup> UNESCO/IUCN 2001.
- <sup>139</sup> For detailed discussion of the Parks in Peril program and its results, see Brandon *et al.* 1998.
- <sup>140</sup> Hockings 2000.
- <sup>141</sup> The Nature Conservancy 2000.
- <sup>142</sup> Cifuentes *et al.* 2000.
- <sup>143</sup> For detailed analysis of of the WWF/CATIE protected area effectiveness evaluation framework, see Carey *et al.* 2000, Cifuentes *et al.* 2000 and Hockings *et al.* (2000).

<sup>144</sup> Carey *et al.* 2000 and Hockings *et al.* 2000.

<sup>145</sup> WWF 2002. See also the case studies in WWF 2002a, WWF 2002b, WWF 2002c and WWF 2002d.

<sup>146</sup> WWF and The World Bank 2003.

<sup>147</sup> See, for example, Salm and Clark 2000, and Roberts and Hawkins 2000.

<sup>148</sup> Pomeroy *et al.* 2003.

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