Comparing the Ecosystem Approach with sustainable use

(Agenda item 19.4 & 19.5)

1. INTRODUCTION

The Ecosystem Approach and sustainable use represent two approaches, at two different scales, to the management of living natural resources and biodiversity conservation. Both approaches have been endorsed by the Parties to the Convention on Biological Diversity (CBD), which has provided an important institutional context for their development and elaboration. Each approach establishes a certain goal and offers direction and recommendations on how that goal is to be realised. Both approaches are characterised at a high level of generality. This is appropriate in that both are intended to be applied in a wide variety of circumstances, but it has raised questions about their exact meaning and manner of implementation. One pressing issue, which is the subject of this paper, concerns the relationship between the two approaches. It is suggested that the Ecosystem Approach provides an over-arching framework for biodiversity management, with sustainable use as one element within that framework.

The paper begins by briefly outlining the main stages in the evolution of the Ecosystem Approach and sustainable use in the context of the CBD. It then compares the two approaches and, finally, considers the appropriate relationship between them.

2. BACKGROUND

The Ecosystem Approach

The Ecosystem Approach emerged as an approach to the management of biodiversity and natural resources during the 1990s, particularly in North America (Hartje et al., 2003). Since then, there has been a series of meetings and reports designed to clarify the Ecosystem Approach. This work has been usefully summarised in several places (Hartje et al., 2003; CBD, 2002).

In 1995 the Ecosystem Approach was adopted by the parties to the CBD as the ‘primary framework’ of action to be taken under the Convention (Decision II/8). At COP 5, held in Nairobi in 2000, Decision V/6 sought to characterise the Ecosystem Approach in more detail. Three regional workshops were held the latter part of 2000 (Smith & Maltby, 2003). At COP 6, Decision VI/12 urged Parties to submit case studies on the Ecosystem Approach and requested the Executive Secretary to develop proposals for refining the principles. An expert meeting on the Ecosystem Approach was held in Montreal in July 2003. The report from that meeting is due to be considered by the SBSTTA meeting in November 2003, prior to COP 7 in February 2004.
This paper uses the characterisation of the Ecosystem Approach that is provided in Annex I to the report of the Montreal meeting. This characterisation draws on earlier descriptions of the Ecosystem Approach including, most importantly, Decision V/6. It also includes some new material. The characterisation consists of two introductory sections followed by the 12 principles of the Ecosystem Approach, each of which is accompanied by a rationale, annotations to the rationale, a case study example, implementation guidelines and an indicative list of tools and sources. Prior to the meeting several attempts had been made to improve the description of the Ecosystem Approach that is found in V/6. Edwards (2003), for example, had proposed that a distinction can be made between the social, biological and policy principles and Korn et al (2003) had suggested a re-ordering and reformulation of the principles in order to better reveal the logic of the Ecosystem Approach. These analyses had considerable merit. Nevertheless, in Montreal the participants agreed to keep the existing order and formulation of the principles and their rationales. Only the other elements in the characterisation are new or amended.

**Sustainable use**

Sustainable use has been promoted in a wide variety of forums and reports, including the World Conservation Strategy (1980) and the Rio Conference (1992). As with the Ecosystem Approach, many institutions and individuals have undertaken work on the issue. IUCN has been particularly prominent in this regard, through its Sustainable Use Initiative and the Sustainable Use Specialist Group.

Sustainable use is one of the three principal objectives of the CBD as spelt out in Article 1 of the treaty and is central to the operation of the convention. Article 10 (Sustainable Use of the Components of Biological Diversity) states that each party will 'Integrate consideration of the conservation and sustainable use of biological resources into national decision-making'. In a process that was explicitly modelled on that employed to develop the Ecosystem Approach, the CBD called for further work to be carried out, including the compilation of case studies, with the aim of clarifying the sustainable use approach (Decision V/24). Three regional workshops were held in 2001-02. Decision VI/13 requested a fourth workshop that could synthesise the results of the earlier ones and provide input to SBSTTA prior to COP 7. This workshop was held in Addis Ababa in May 2003.

This paper uses the characterisation of sustainable use that is provided by the Draft Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity. These draft principles appear in Annex I of the report on the Addis Ababa workshop (UNEP/CBD/WS-Sustainable Use/4/4). This document includes: a section on the use of terms; a set of fourteen principles each with an accompanying paragraph of explication; between three and seven operational guidelines for each principle; and further elaboration of instruments associated with the operational guidelines. As with the Ecosystem Approach, there are some difficulties in interpreting how these various elements relate to one another.

### 3. COMPARING THE ECOSYSTEM APPROACH WITH SUSTAINABLE USE

**Different goals**

The central difference between the Ecosystem Approach and sustainable use is that the main goals are different. Looking at the characterisation of the Ecosystem Approach contained in the Report of the Expert Meeting on the Ecosystem Approach, the identity of the main goal may not be immediately obvious. Nevertheless, Principle 5 comes closest to specifying the primary objective (see Table 1). It implies that the goal is the maintenance of ecosystem services and that the conservation of ecosystem structure and functioning is the means to the realisation of that goal. The main goal of sustainable use (considered as an approach to the management of biodiversity) is more easily identified. It is the
sustainable use of the components of biodiversity. This goal is not explicitly stated in the principles themselves, but is articulated in the title of Section II of the Draft Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (See Table 1).

Table 1: A comparison of the main goals of the Ecosystem Approach and Sustainable Use

<table>
<thead>
<tr>
<th>Main Goal</th>
<th>The Ecosystem Approach</th>
<th>Sustainable Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach</td>
<td>..the sustainable use of biodiversity components</td>
</tr>
<tr>
<td>Principle 5</td>
<td></td>
<td>Title of Section II</td>
</tr>
</tbody>
</table>

The goal of the Ecosystem Approach

The goal of the Ecosystem Approach can be elucidated further by examining the other principles and the associated rationales and annotations. There, the Ecosystem Approach is contrasted with two other types of approach to the management of biodiversity. The Ecosystem Approach is a holistic approach that takes account of the complex interactions between organisms and their environment, and places this within the broader social and economic context. The first contrast that is drawn is with less holistic approaches that focus on particular components of biodiversity (most typically populations and species), or which ignore the socio-economic context in which management takes place. This contrast is made explicitly in these two passages:

- Management of living components is considered alongside economic and social considerations at the ecosystem level of organisation, not simply a focus on managing species and habitats. (Report of the Expert Meeting on the Ecosystem Approach, Annex I, paragraph 3)
- Ecosystem functioning and resilience depends on a dynamic relationship within species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment. The conservation and, where appropriate, restoration of these interactions and processes is of greater significance for the long-term maintenance of biological diversity than simply protection of species. (Report of the Expert Meeting on the Ecosystem Approach, Annex I, Rationale of Principle 5)

A second contrast is with approaches that are based on a sharp distinction between what is protected and what is not protected, and where the management is focused on the former. These approaches may be applied to species (where the distinction is between protected species and non-protected species) or to land (where the distinction is between protected areas and areas that are not protected). In contrast, the Ecosystem Approach is more flexible and advocates a range of strategies entailing varying degrees of management and protection in different circumstances. This contrast is made explicit in the rationale for Principle 10.

...There has been a tendency in the past to manage components of biological diversity either as protected or non-protected. There is a need for a shift to more flexible situations, where conservation and use are seen in context and the full range of measures is applied in a

In addition to the contrasts with other approaches, it should be emphasised that the Ecosystem Approach, as characterised in the Report of the Expert Meeting on the Ecosystem Approach, does not specify the goal of the approach in any detail. It is not stated which ecosystem services should be maintained, although it is indicated that the goals include both human-centred ones and intrinsic ecosystem goals. The rationale for Principle 1 states ‘Ecosystems should be managed for their intrinsic values and for the tangible and intangible benefits for humans’. The Ecosystem Approach holds that the choice of specific goals is a matter for individual societies. Principle 1 states ‘The objectives of management of land, water and living resources are a matter of societal choice.’

**The goal of Sustainable Use**

The goal of sustainable use is more straightforward. Nevertheless, in the context of the comparison with the Ecosystem Approach, three features of the goal are worth noting.

- The goal is said to be the sustainable use of biodiversity components. The phrase ‘biodiversity components’ is not defined in Article 2 of the Convention on Biological Diversity, which deals with definitions. The report on the Addis Ababa meeting aims to rectify this by characterising ‘components of biodiversity’ as including:
  
  a) Genetic material;
  
  b) Populations;
  
  c) Species;
  
  d) Functional groups (guilds such as pollinators) and communities;
  
  e) Ecosystems and habitats (for example, undifferentiated vegetation cover, forest, coral reefs, and other aggregate terms that denote the other biotic components of ecosystems).

This characterisation implies that sustainable use is concerned with the sustainable use of all these components, including ecosystems (although the cited examples suggest that there is an emphasis on the components of ecosystems). In any case, in practice sustainable use is a management approach that is most typically applied at the level of populations of species. To the extent that this is so, then sustainable use can be contrasted with the more holistic approach of the Ecosystem Approach.

- Nevertheless, sustainable use is holistic in another respect, for it takes account of the socio-economic context in which the management of biodiversity takes place. There are several aspects of this. Sustainable use is motivated by the claim that the economic returns from use can provide incentives for conservation (Draft Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity, paragraph 23). It recognises the importance of social, economic and other factors in determining if use is sustainable (Draft Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity, paragraph 40). And it is seen as contributing to the goals of poverty reduction and sustainable development (Draft Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity, paragraph 21). In all these respects sustainable use shares common ground with the way in which the Ecosystem Approach takes account of the socio-economic context of biodiversity management.
Sustainable use also shares with the Ecosystem Approach the contrast with approaches that make a rigid demarcation between protected and non-protected species. Sustainable use holds that it is possible to use species in a way that is sustainable and even contributes to conservation, irrespective of the status of the species if adequate safeguards are in place.

**Similarities in the implementation of the two approaches**

In addition to the differences and similarities in the goals of the two approaches, they share considerable common ground with regard to how the goals are to be achieved. Some of these similarities are noted in Table 2. The assumptions and values that are guiding the implementation of these two approaches are largely the same. There are common commitments to decentralisation, avoiding perverse incentives, using adaptive management and benefit sharing. These similarities are not surprising given that both approaches have evolved through similar processes in the same institutional context.

**Table 2: Similarities in the implementation of the Ecosystem Approach and Sustainable Use**

<table>
<thead>
<tr>
<th></th>
<th>The Ecosystem Approach</th>
<th>Sustainable Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decentralisation</td>
<td>Management should be decentralised to the lowest appropriate level</td>
<td>Recognizing the need for a governing framework consistent with international, national and subnational laws, local users of biodiversity components should be sufficiently empowered and supported by rights to be responsible and accountable for use of the resources concerned</td>
</tr>
<tr>
<td></td>
<td><em>Principle 2</em></td>
<td><em>Principle 2</em></td>
</tr>
<tr>
<td>Economic context</td>
<td>Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Reduce those market distortions that adversely affect biological diversity</td>
<td>International, national and subnational policies, laws and regulations that distort markets and promote habitat degradation or otherwise generate perverse incentives for conservation and sustainable use of biodiversity, should be identified and removed or mitigated</td>
</tr>
<tr>
<td></td>
<td>(b) Align incentives to promote biodiversity conservation and sustainable use;</td>
<td><em>Principle 3</em></td>
</tr>
<tr>
<td></td>
<td>(c) Internalise costs and benefits to the given ecosystem to the extent feasible</td>
<td>The costs of management and conservation of biological diversity should be internalised within the area of management and reflected in the distribution of benefits from</td>
</tr>
<tr>
<td>Adaptive management</td>
<td>Use adaptive management practices</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Operational guidance Point 3</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The ecosystem approach should</td>
<td></td>
</tr>
<tr>
<td></td>
<td>consider all forms of relevant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>information, including scientific</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and indigenous and local</td>
<td></td>
</tr>
<tr>
<td></td>
<td>knowledge, innovations and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>practices</td>
<td></td>
</tr>
<tr>
<td>Principle 11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefit sharing</th>
<th>Enhance benefit-sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Operational guidance Point 2</em></td>
</tr>
</tbody>
</table>

| Principle 4          | the use.                        |

**Principle 13**

Adaptive management should be practiced, based on:

(a) Science and traditional and local knowledge;

(b) Iterative, timely and transparent feedback derived from monitoring the use

(c) Adjusting management based on feedback from the monitoring procedures

**Principle 4**

**4. THE RELATIONSHIP BETWEEN THE ECOSYSTEM APPROACH AND SUSTAINABLE USE**

It has been seen that the two approaches exemplify, at least in part, similar approaches to biodiversity management. It has also been noted that they share similar principles and guidelines with regard to how their respective goals are to be realised. But they do have different goals and the relationship between the two approaches turns on the relationship between their respective goals.

In addressing the relationship between the two approaches, the first point to note is that each contains references to the other. The most important references are set out in Table 3.
### Table 3 References to sustainable use in the Ecosystem Approach and vice versa

<table>
<thead>
<tr>
<th>References to sustainable use in the Ecosystem Approach</th>
<th>References to the Ecosystem Approach in sustainable use</th>
</tr>
</thead>
</table>
| The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way.  
*Description of the ecosystem approach, Paragraph 1.* | It is a fundamental assumption that the application of the practical principles and operational guidelines is set within the context of the ecosystem approach.  
*Draft Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity, Paragraph 30.* |
| The ecosystem approach should seek the appropriate balance between and integration of, conservation and use of biological diversity.  
*Principle 10* | Sustainable use management goals and practice should avoid or minimise adverse impacts on ecosystem services, structure and functions as well as other components of ecosystems.  
*Principle 5* |
| Ecosystems, ecological processes within them, species variability and genetic variation change over time whether or not they are used. Therefore, governments and resource managers should take into account the need to accommodate change, including stochastic events that may influence the sustainability of a use.  
*Draft Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity, Paragraph 50 (b)* | In circumstances where the risk of converting natural landscapes to other purposes, encouraging sustainable use can provide incentives to maintain habitats and ecosystems, the species within them, and the genetic variability of the species. Also, for particular species such as crocodiles, sustainable use has provided substantial incentives for conserving a dangerous animal that represents a threat to humans.  
*Draft Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity, Paragraph 50 (c)* |
The references within the Ecosystem Approach to sustainable use indicate that the Ecosystem Approach should promote sustainable use and integrate it with conservation. The references within sustainable use to the Ecosystem Approach also imply that the two are compatible, but they go rather further in characterising the nature of the relationship. In particular, it is suggested that sustainable use needs to be placed within the context of the Ecosystem Approach, that sustainable use should minimise the adverse impact on ecosystems and that sustainable use can provide incentives for conserving ecosystems. The implied picture is that the Ecosystem Approach represents a broad, holistic approach that sets the overall goal for the management of ecosystems. Sustainable use has the narrower goal of ensuring that the use of the components of biodiversity within an ecosystem is sustainable, and it can be seen as nested within and contributing to the goal of maintaining ecosystem services.

One element in this relationship is that sustainable use provides a way of operationalising the Ecosystem Approach. The Ecosystem Approach can appear difficult to implement and sustainable use, which is a more familiar concept to many biodiversity managers, offers one way of putting it into practice. On the other hand, it has also been suggested that, in forestry and fisheries, ecosystem management may be more practicable than management focused on individual populations or species (Robinson 2001).

Of course, if sustainable use is an approach that itself incorporates the use and management of ecosystems (an interpretation that is suggested by the definition of ‘components of biodiversity’ found in the report from the Addis Ababa meeting, although a more careful reading implies that sustainable use might be concerned with the biotic components of ecosystems rather than whole ecosystems) then the view of sustainable use as nested within the Ecosystem Approach is called into question. This latter perspective on the relationship between the two approaches assumes that sustainable use is concerned primarily with the use of species and populations.

The outstanding question concerns how the goal of the Ecosystem Approach shapes pursuit of sustainable use if the latter is placed within the context of the Ecosystem Approach. In simple terms one might say that the Ecosystem Approach might exert two sorts of influence. If there is a strong emphasis on keeping ecosystem functioning and structure intact and maintaining ecosystem resilience, then the effect is likely to be the imposition of additional constraints on sustainable use. On this view the use of species must not only be sustainable at the population or species level, it must also not weaken the ecosystem in any way. This is likely to reduce the amount of use that can take place. WWF appear to come close to endorsing this interpretation of the implications of the Ecosystem Approach in its application to fisheries (WWF 2003).

On the other hand, if the emphasis in the Ecosystem Approach is on maintaining certain ecosystem services and there is some redundancy at the species level in achieving this objective, then the effect of placing sustainable use within the Ecosystem Approach may be to loosen the constraints on use at the individual population or species level (Robinson 2001). Proponents of use are likely to favour this interpretation of the Ecosystem Approach.

The impact of the Ecosystem Approach therefore depends on the specification of the goal of the Ecosystem Approach. As has been noted, the CBD does not characterise that goal in any detail. It is said to be a matter for societal choice. Thus the implications of the Ecosystem Approach for sustainable use are, in turn, a matter of societal choice. Although the CBD does not spell this out the choice may be made differently in relation to different ecosystems.
5. CONCLUSION

The Ecosystem Approach and sustainable use have been the subject of considerable attention recently in the context of the Convention on Biological Diversity, with a series of meetings devoted to the elaboration and clarification of each.

The two approaches share some important features. They both place biodiversity management within its social and economic context and they both assume that such management needs to be exercised flexibly across different ecosystems that are subject to varying degrees of protection and human intervention. They differ chiefly in their overall objectives. The Ecosystem Approach focuses on the maintenance of ecosystem services, but does not specify these in detail, while sustainable use aims at ensuring the sustainability of the use of individual components of biodiversity.

The elaboration of the two approaches within the CBD implies that sustainable use is best placed within the overarching context of the Ecosystem Approach. It is one tool, among several, for implementing the Ecosystem Approach. This view of the relationship implies that the two approaches are complementary and that pursuit of sustainable use should be shaped by the goal of maintaining ecosystem services. Since that goal is not specified in any detail in the CBD’s characterisation of the Ecosystem Approach, the nature of that influence is similarly indeterminate. Nevertheless, situating sustainable use in the context of the Ecosystem Approach does provide a framework for addressing this important question. It identifies a range of considerations relating to ecosystem services and functioning that may need to be taken into account in taking decisions about sustainable use. But ultimately, the decision about the goal of ecosystem management and the implications for sustainable use are matters for societal choice.

For more information, please contact:

Dr Barney DICKSON
Senior Policy and Research Officer
Fauna and Flora International
Great Eastern House
Tenison Road
Cambridge CB1 2TT
United Kingdom
Tel: +44 1223 571 000
Fax: +44 1223 461 481
Email: barney.dickson@fauna-flora.org

Dr Steve EDWARDS
Senior Advisor
- World Conservation Congress
IUCN - The World Conservation Union
Rue Mauverney 28
1196 Gland
Switzerland
Tel: ++41 (22) 999-0224
Fax: ++41 (22) 999-0020
Email: steve.edwards@iucn.org
BIBLIOGRAPHY


World Resources Institute (2000) People and Ecosystems: The Fraying Web of Life. World Resources Institute