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**IN-DEPTH REVIEW OF THE APPLICATION OF THE ECOSYSTEM APPROACH**

*The ecosystem approach sourcebook and case study database*

*Note by the Executive Secretary*

**I. INTRODUCTION**

1. In decision VIII/11, the Conference of the Parties, in the refined multi-year programme of work (annex II), decided to undertake the in-depth review of the ecosystem approach at its ninth meeting and in decision VIII/15 (annex III) provided guidelines for the review of the programmes of work of the Convention.

2. In decision VII/11, para. 9, the Conference of the Parties requested the Executive Secretary, in collaboration with Parties and relevant international and regional organizations, to facilitate the undertaking of the following activities:

(a) Undertake an analysis of the range of existing tools and approaches, that are consistent with the Convention's ecosystem approach, but operate on different levels and belong to a variety of sectors/communities, and are applied in programmes of work of the Convention on Biological Diversity, in order to learn from their experiences and build upon their approaches, and identify any gaps in the coverage of such tools;

(b) Where needed, facilitate development of new tools and techniques to enable the implementation of the ecosystem approach, and in collaboration with appropriate regional and international organization develop tools specific to each sector and biome;

(c) Continue collection of case-studies at national, sub-regional, regional and international level on the implementation of the ecosystem approach, and develop, in cooperation with the clearing-house mechanism, a database of case-studies, searchable by biome/ecoregion and sector; and

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\* UNEP/CBD/SBSTTA/12/1.

(d) Make the above widely available to Parties through the development of a web-based "sourcebook" for the ecosystem approach, accessible through the clearing-house mechanism. This sourcebook should be non-prescriptive and allow adaptation to differing regional, national and local needs. It should be prepared in a language that is brief, non-technical and simple, ensuring its accessibility to practitioners working to implement the ecosystem approach on the ground. A supporting summary explanation of the ecosystem approach will also be prepared. It should be developed in collaboration with other relevant organizations, peer-reviewed and field tested as appropriate, and made available through the clearing-house mechanism, in hard copy and on CD-Rom, and periodically revised

(e) In response to these decisions, the Executive Secretary has developed a web based sourcebook. This document reports on it's current status and highlights what further actions are required and opportunities are available to increase the use of the ecosystem approach as the fundamental framework for meeting the three objectives of the Convention. Section II of this document describes the Ecosystem Approach Sourcebook, Section III describes the Tools and Approaches that are included in it and Section IV describes the Case Study Database. Section V presents an analysis of the Ecosystem Approach Case Study Database and conclusions and are drawn in Section VI.

## **II. THE SOURCEBOOK**

(f) The Ecosystem Approach Sourcebook is available at <http://www.cbd.int/programmes/cross-cutting/ecosystem/sourcebook/home.shtml>. The sourcebook structure is based on other CHM programme portals, including the Invasive Alien Species Portal, that inform users about the CBD work, ask for information and opinions from a user group, was constructed using generic CHM-developed software modules, and their navigation style and structure has been tested and is part of the existing site structure for [www.cbd.int](http://www.cbd.int).

(g) The Sourcebook includes sections on: understanding the ecosystem approach; how to implement the ecosystem approach; a database of case studies and tools and approaches consistent with the ecosystem approach; and links and resources for ecosystem approach users (for example, links to other similar approaches).

(h) A section of the sourcebook provides information on the application of the ecosystem approach in the form of a beginners' and advanced user guides. The beginners' guide seeks to provide a brief introduction on how to apply the ecosystem approach to a project or issue. Further information on application of the approach can be found under the Advanced User Guide. This guide does not set out exactly how to deliver the three objectives of the Convention through the ecosystem approach. Instead, it explains the type of actions that need to be taken and why these are important for meeting all the principles of the ecosystem approach.

## **III. TOOLS AND APPROACHES**

(i) The sourcebook also contains a list of tools and techniques which can be used to meet the ecosystem approach principles. The list is not exhaustive and there are many other applicable methods that could be used. This section of the sourcebook could be greatly expanded to provide a better resource for anyone seeking to use the ecosystem approach with the addition of further tools and information on other approaches.

3. The list of tools and techniques was drawn from UNEP/CBD/SBSTTA/12/INF/8. This paper was written in response to the need to address barriers to the application of the ecosystem approach and included the conclusions of an Expert Meeting on the Ecosystem Approach held in Montreal from 7 to 11 July 2003. The report of the meeting (UNEP/CBD/SBSTTA/9/INF/4) considered at length the barriers to application of the ecosystem approach. The outcomes of the workshop included operational guidance for the application of the ecosystem approach, largely to address barriers, which was considered at SBSTTA resulting in recommendation IX/6. This was considered by the seventh meeting of the Conference of the Parties resulting in Decision VII/11. Annex I of that decision refined and elaborated the ecosystem approach, based on assessment of experience of Parties in implementation, and included implementation guidelines for each of the 12 principles. The guidelines essentially represent responses to overcome identified barriers.

4. Other toolkits were also used to develop the list of tools and approaches held in the sourcebook. For example, the World Bank's toolkit on participatory processes, UNESCO – MAB Biosphere Reserves Directory, Ramsar Toolkit and the then draft IUCN's Earth Conservation Toolbox.

#### IV. CASE STUDY DATABASE

5. A key area of the sourcebook is the database composed of case studies, tools and approaches consistent with the ecosystem approach<sup>1</sup>. Much can be learnt from the experiences of others when applying the ecosystem approach. The sourcebook case study database can be used to find information on case studies and tools which have met some or all of ecosystem approach principles. The database can be searched by the following categories individually or combined (e.g. agricultural biodiversity and public participation):

- Biomes
  - Agricultural biodiversity
  - Dry and sub-humid land biodiversity
  - Forest biodiversity
  - Inland water biodiversity
  - Island biodiversity
  - Marine and coastal biodiversity
  - Mountain biodiversity
  - Polar biodiversity
- Sectors
  - Agriculture
  - Aquaculture
  - Fisheries
  - Forestry
  - Mining/gas/oil
  - Others
- Issues
  - Access to genetic resources and benefit sharing
  - Article 8j – traditional knowledge, innovations and practices
  - Biodiversity and tourism
  - Climate change
  - Economics, trade and incentives

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<sup>1</sup> see <http://www.cbd.int/programmes/cross-cutting/ecosystem/sourcebook/search.shtml>

- Ecosystem approach
- Global Strategy on Plant Conservation
- Global taxonomy initiative
- Governance, law and policy
- Identification, monitoring and indicators
- Impact assessment
- Institutional arrangements
- Invasive alien species
- Liability and redress
- Pollution
- Protected areas and *in-situ* conservation
- Public participation
- Scientific assessment
- Strategic plan and 2010 target
- Sustainable use of biodiversity
- Transboundary conservation
- Transfer, technology and co-operation
- Tools and approaches (main headings)
  - Public participation
  - Education and awareness
  - Governance, law and policy
  - Management and incentives
  - Data, modelling and modelling
  - Protected areas and land use policy
  - Cross-sectoral research and working
  - Indicators
  - Others
- Ecosystem approach principles and operational guidance
  - search any of the 12 principles of the ecosystem approach or the five points of operational guidance

6. A key feature of the sourcebook is the ability to search for case studies which provide examples of projects which have at least met some of the Ecosystem Approach principles. Case studies can be submitted by anyone to the sourcebook after gaining a CBD user account (a simple on-line process). Case study authors can then update and edit their submissions whenever they require by on-line access to their submissions.

7. Case studies are collected via an on-line questionnaire. To enable people to submit as much or as little information as they like there are few mandatory fields (questions that require and answer if it is to be accepted into the sourcebook) in the questionnaire. The sections of the questionnaire are divided as follows:

- Project details (includes *inter alia*):
  - Author
  - Organisation
  - Title of project
- Background to project
  - Project statement
  - Project issues

- Highlighted aspects of the ecosystem approach
- Conclusions
- Sectors and biomes
- Tools and approaches
- Issues
- Ecosystem approach principles
- Lessons learned and outcomes
- References
- Contact details

## V. ANALYSIS OF THE ECOSYSTEM APPROACH SOURCEBOOK CASE STUDY DATABASE

8. Much can be learnt from the experiences of others when applying the ecosystem approach. The sourcebook case study database can be used to find information on case studies and tools which have met some or all of ecosystem approach principles. The database can be searched by biomes, sectors, issues, tools and approaches, and ecosystem approach principles and operational guidance [see <http://www.cbd.int.org/programmes/cross-cutting/ecosystem/sourcebook/search.shtml>]. Case studies can be submitted by anyone to the sourcebook after gaining a CBD user account (a simple on-line process). Case study authors can then update and edit their submissions whenever they require by on-line access to their submissions.

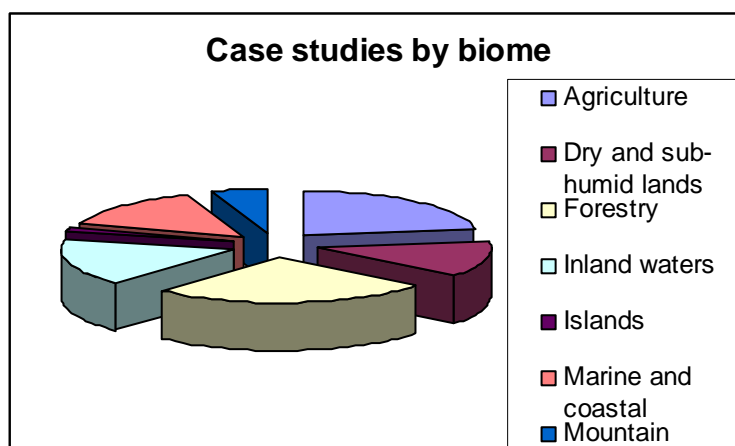
9. Another section of the sourcebook provides information on the application of the ecosystem approach in the form of a beginners' and advanced user guides. The beginners' guide seeks to provide a brief introduction on how to apply the ecosystem approach to a project or issue. Further information on application of the approach can be found under the Advanced User Guide. This guide does not set out exactly how to deliver the three objectives of the Convention through the ecosystem approach. Instead, it explains the type of actions that need to be taken and why these are important for meeting all the principles of the ecosystem approach.

### *Ecosystem approach sourcebook content*

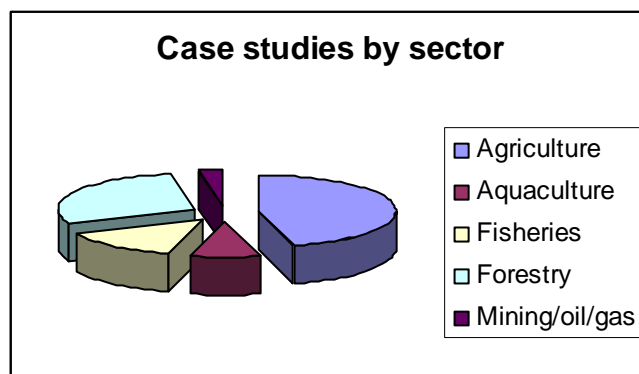
10. The sourcebook contains information on 44 case studies. The information in this section has been gathered through an analysis of all the case studies held in the sourcebook. The majority of the case studies (89%) have not sought to implement the ecosystem approach but have been analysed against the approach after the work has been completed. It is important to stress that case studies do not have to focus on the ecosystem approach to be included in the sourcebook. The aim of the sourcebook is to collect information on all projects and actions from which others can learn.

11. The case studies come from many sources but particularly from the IUCN sponsored workshops led by Ed Maltby and Richard Smith on 'Using the ecosystem approach to implement the Convention on Biological Diversity' (see <http://www.iucn.org/themes/cem/publications/index.html>). There is broad geographical coverage with case studies from 32 countries including from Africa, the Americas, Asia and Europe. Notable exceptions include case studies from the Pacific, central Asia and the Middle East.

12. The case studies cover all biomes with the exception of polar biodiversity. However, most are focussed on agriculture, forests and inland waters, several case studies cover more than one biome (see diagram 1 below). Efforts are needed to gather additional case studies on all biomes but particularly those which are poorly represented (island, mountains and polar biodiversity).



1. Analysis of the case studies by sector has a similar focus with most focussing on agriculture and forestry.



13. The authors are also asked which specific issues their case studies examine. The most frequently cited are:

- Access to genetic resources and benefit sharing
- Article 8j; traditional knowledge, innovations and practice
- Public participation
- Sustainable use of biodiversity

14. As mentioned above case studies can relate to any subject which can contribute to implementation of the ecosystem approach and the CBD objectives. As further case studies are added a broader coverage of issues should be developed.

15. The case study authors are requested to provide information on which ecosystem approach principles have been met by the case studies. In general the cases studies meet most of the principles but this does not necessarily mean that all issues identified under a principle are considered. For example, principle 4 notes there is a need to understand and manage the ecosystem in an economic context, including, reducing market distortions; aligning incentives to increase biodiversity and internalising costs and benefits in the given ecosystem to the extent feasible. An author might indicate a case study has

considered the economic context but this might only relate to reducing market distortions and not how incentives or environmental costs should be dealt with.

16. The sourcebook does not request authors to comment on the practical application of the ecosystem approach as a tool. However there are some comments within the case study conclusions and lessons learned that can help strengthen the application of the ecosystem approach. These include<sup>2</sup>:

- The ecosystem approach is an important tool in determining project scale, the targeting of effort, gaining engagement of stakeholders, empowering communities and most importantly ensuring a successful self-sustaining exit strategy;
- The ecosystem approach has the potential to reconcile the needs for increased food production, provision of other goods and services, and also contribute to conservation;
- The non-timber forest products approach could gain more rapid adoption beyond local levels by linking to approaches such as the ecosystem approach;
- The ecosystem approach can be used to support protected areas such as biosphere reserves through the promotion of transboundary co-operation and harmonisation of development assistance;
- The ecosystem approach could be used to convince authorities and stakeholders that the application of a community-based management system is the way to guarantee sustainable management of natural resources and sustainable development; and
- The ecosystem approach needs to take into account on-going activities and initiatives in the area.

17. The case studies also provide comment on how some issues covered by the principles can be met. For example:

- Public participation
  - Participatory processes need to be flexible and dynamic;
  - Community involvement and participation is a lengthy and complex process for which adequate time and resources need to be budgeted;
  - Multiple stakeholder participation and buy-in is crucial for success in the ecosystem approach;
  - Conservation activities that involve communities need to follow the pace of those communities and not the pace of outsiders with externally determined deadlines;
  - Field level workers need to learn the difference between teaching and participation;
  - Empowering local communities means they are interested and willing to discuss natural resource use concessions;
  - Local community artists can be important for building awareness; and
  - Biodiversity study reports need to be packaged into appropriate formats for different stakeholders such as planners, policy-makers, and local communities.
- Working at the right scales
  - Integrated biodiversity management can resolve tensions between conservation, sustainable use and development; and
  - Modelling is essential when dealing with multiple variables simultaneously.
- Limits of ecosystem functioning
  - Results of studies need to be placed within the context of relationships between the ecosystem and development, as well as ecological processes within the ecosystem; and
  - More needs to be known about ecosystem functioning if particular species are being targeted for extraction to ensure ecosystems are not threatened by their removal.

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<sup>2</sup> The comments have been collated from an examination of the case study conclusions and lesson learned.

- Institutional constraints/decentralised management
  - Institutional change is at the core of natural resource management, but institutional change is slow, incremental and open to power politics and corruption;
  - In many places the government is unwilling to devolve power;
  - Local-level initiatives that improve local environmental policies benefit from support at the regional and national levels;
  - The closer management and decision making is to the community the greater its sense of ownership, accountability and participation;
  - Success of territorial management relies on local community organisations and their internal regulations;
  - Inter-institutional alliances are an effective strategy for identifying solutions and for policy and decision-making;
  - Secure tenure over customary resources needs to be developed;
  - Community empowerment can prevent illegal forest use;
  - A key challenge to ecoregional conservation is the linking of top-down visions to bottom-up everyday needs of the people within the region; and
  - Good communication and high-level political support is needed for the development of the overall management system.
- Sustainable use
  - Reliable and functioning monitoring systems capable of indicating when a state of balance is achieved between conservation and use of biological resources are important.
- The economic context
  - National policy can be informed by the cost-effectiveness of reduced impact logging;
  - Total economic value is a powerful tool for demonstrating the cost effectiveness of meeting CBD objectives to policy makers;
  - Local users of natural resources are willing to collaborate in conserving their environment if economic benefits, property rights and access to land are not diminished;
  - Local level economic resource valuation can build awareness of the need for measures to ensure the sustainable use of the resource base;
  - Regional economic valuation of resources can assist in integrated transboundary planning within the basin; and
  - The economic appraisal of conservation and the sustainable use of resources generates interest from the political and economic sectors.
- Working at appropriate time scales
  - A project can only be judged as successful if they survive in the longer term;
  - For projects to continue to develop empowerment and strengthening of institutions at the local scale in order to promote sustainability are required; and
  - Long-term political support can be necessary to provide the continuity that is essential for ecosystem restoration.

## VI. CONCLUSIONS

18. Analysis of the case studies presented here, from the CBD's ecosystem approach sourcebook, and from other reviews<sup>3</sup>, has raised several key issues which need to be addressed if the ecosystem approach is to be successfully used to meet the three objectives of the CBD.

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<sup>3</sup> Barriers to application have been identified in previous reviews for example [UNEP/CBD/SBSTTA/9/INF/4](#) and Annex 1 to Decision VII/11. These include (i) general obstacles to implementation of the Convention (List B in annex of decision VIII/8) and (ii) those specific to the ecosystem approach (see reports at



19. Specific barriers to the use of the approach can be grouped as: (i) ineffective stakeholder participation in planning and management; (ii) limited understanding of what the approach seeks to achieve; (iii) the lack of capacity for decentralised and integrated management; (iv) insufficient institutional cooperation and capacity; (v) lack of dedicated organisations able to support delivery of the ecosystem approach; (vi) overriding influence of perverse incentives and conflicting political priorities; (vii) limited tools for implementing the approach; and (viii) using the ecosystem approach. These are considered in turn and recommendations given for addressing the issues.

## **1. Ineffective stakeholder participation in planning and management**

20. The ecosystem approach makes it clear that effective ecosystem management will only be achieved where there is effective stakeholder participation. Several case studies note that active participation depends on good communication and established mechanisms for getting people engaged. In some cases stakeholders might not have the means to attend meetings (e.g., no fuel for transport to meetings, it is not part of their culture to attend diverse meetings, there is no where to stay if travelling far from home), timescales for their involvement might be inappropriate (must work at pace of the community) or, documents and meetings might not be available in various appropriate languages and dialects.

21. In some cases local communities and other stakeholders need training to effectively participate in planning and management. This can be very useful for increasing the capacity of local leaders to understand, for example, legislation, biodiversity monitoring and delivering economic incentives.

22. Where stakeholders are fully engaged and empowered they are also better placed to manage the ecosystem in a way that meets their own needs but also ensures others do not use it unsustainably. For example, where there are clear mechanisms for enforcing use restrictions (e.g., illegal fishing or livestock overstocking) and these can be enforced by local communities, then stakeholders are truly empowered and feel they have the capacity to manage areas sustainably.

## **2. Limited understanding of what the approach seeks to achieve**

23. The ecosystem approach is often promoted, and widely regarded, as a tool primarily for the conservation and sustainable use of biodiversity. This is true for all levels of engagement, local, regional and national. The current description of the ecosystem approach<sup>4</sup> reinforces the problem by omitting reference to its role in human welfare. The role played by biodiversity in supporting human well-being and sustainable development has been thoroughly established through the publication of the Millennium Ecosystem Assessment. This problem might overcome if the name 'ecosystem approach' was to include a strap-line such as 'ecosystem approach: human and environment well-being'.

24. Although the overall aim of the ecosystem approach is to achieve all three objectives of the CBD, and in turn this will make a significant contribution to sustainable development, its biodiversity focus makes it less attractive to many important potential users. Instead the ecosystem approach needs to be

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<http://www.cbd.int/programmes/cross-cutting/ecosystem/background.asp?tit=syn> and documents mentioned under <http://www.cbd.int/programmes/cross-cutting/ecosystem/documents.aspx>).

<sup>4</sup> *"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. Thus, the application of the ecosystem approach will help to reach a balance of the three objectives of the Convention: conservation; sustainable use; and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources", decision V/6, section A, para. 1).*

promoted as providing a fundamental delivery mechanism for progress towards sustainable development. The core concept of the approach lies in integrating and managing the range of demands we place on the environment, such that it can indefinitely support essential services and provide benefits for all without deterioration of the natural environment. By using the ecosystem approach it is possible to address the issues affecting not just biodiversity but also fundamental problems such as poverty alleviation, natural resource depletion, pollution and its affects on human well-being.

25. The ecosystem approach needs to be applied beyond its traditional users at the “environment” level. For example:

(a) The ecosystem approach needs to be systematically applied within strategies to achieve the Millennium Development Goals, in particular as a means to address potential tradeoffs and synergies among the various Goals;

(b) The application of the ecosystem approach at national level could help in designing and implementing national measures to accompany trade liberalization aimed at avoiding undesirable land and other resource use changes;

(c) Application of the ecosystem approach is particularly important for agriculture, in particular in land use planning (for example, such that agricultural expansion is directed primarily to already converted lands), in reconciling the demand for water with other uses, and using nutrients within the carrying capacity of the ecosystem; and

(d) Application of the ecosystem approach to planning and development, including for example transport networks, housing needs and sanitation, would ensure benefits beyond the primary goal (e.g. a road) are sustainable and more wide-ranging.

26. These examples illustrate that the ecosystem approach needs to be used more widely as a tool for addressing important trade off decisions between multiple and potentially conflicting objectives. Therefore, it needs to be marketed better to a wider range of users.

27. The case studies presented in this document and in the ecosystem approach sourcebook clearly show that where the ecosystem approach is applied it promotes biodiversity, social and economic benefits collectively. Indeed, application of the approach, particularly at the local level, is often driven by social and economic motives – not biodiversity considerations directly. Principle 4 of the approach already recognises this context (“...there is usually a need to understand and manage the ecosystem in an economic context”). The case studies examined here and in the sourcebook have a biodiversity focus, the mechanisms for applying the ecosystem approach might be strengthened by considering case studies not explicitly concerned with the environment but where the environment has been included as part of the assessment.

28. Conversely, barriers to the promotion of the ecosystem approach can include lack of awareness, by those promoting it, of equivalent approaches already in use by other groups. The “ecosystem approach” is CBD terminology and where others do not use the term it should not be assumed that they do not practice its principles or that they do not have substantial experience in doing so. For example, other existing approaches such as Sustainable Forest Management, Integrated Coastal Zone Management, Integrated River Basin Management, the Biosphere Reserve concept, the Regional Seas Programs, regional conventions such as the Alpine Convention and the Carpathian Convention, etc. are closely linked to and may enable application of the Ecosystem Approach for certain sectors, biomes, regions etc.

29. Many elements of the Ecosystem Approach exist in other management approaches and are implemented in projects and other activities without reference to the Ecosystem Approach. Better

awareness of how these approaches contribute to sustainable development and the goals of the CBD would show how they seek similar aims and goals. It is important to focus on the benefits delivered by these approaches and to ensure lessons learnt are shared with those using the ecosystem approach, for example through the sourcebook.

### **3. The lack of capacity for decentralised and integrated management**

30. The case studies have shown that where there are good links between local, regional and national levels this can foster better management processes. Often there are gaps between the needs of local managers and government departments. In other situations there are historical reasons why there is a lack of community involvement in management decisions, for example where there are centralized systems of natural resource management by the state. In such situations there might be a lack of trust and awareness by the local population and limited capacity to be involved in management decisions. The ecosystem approach sourcebook and the links it provides to tools on public participation can be used to develop projects which seek to attain greater stakeholder inclusion and consequently management at the local level.

### **4. Insufficient institutional cooperation and capacity**

31. It is noted above that limited understanding of what the ecosystem approach tries to achieve hampers its application. Capacity building on the use and application of the ecosystem approach is required at all levels of policy making and management from local to the highest political level if this barrier is to be addressed. Priorities differ according to the target groups in question. A considerable degree of capacity building, including the development of tools, has been undertaken by relevant organizations and the Secretariat has supported capacity building within available resources.

32. Knowledge management is also fundamental to cooperation between organizations. For example national monitoring programmes might not be shared or values agreed with local groups working on the group to map their own areas. The ecosystem approach principles emphasize the need to disseminate the results of data-gathering. It is important to ensure this applies to all phases of data collection, from the first surveys, through to evaluation of monitoring results and long-term surveillance outcomes.

33. Poor sharing of knowledge not only reduces stakeholders' ability to engage in management and planning decisions but can also lead to mistrust. This can severely restrict the development of consensus between stakeholders and limit the ability to resolve future problems successfully and succinctly.

### **5. Lack of dedicated organisations able to support delivery of the ecosystem approach**

34. The case studies have shown there is often a lack of the right range of institutions and organisations to help support the implementation of the ecosystem approach. This might be at the local level where there are no mechanisms available for villagers to be involved. This means their concerns and opinions are not adequately collated and available for future reference. In other cases local level institutions are often not experienced in negotiating with regional or national bodies limiting their ability to get their views across as they lack technical skills or communication tools. Workshops and capacity building is essential in these situations to encourage better engagement and transfer of knowledge and opinions.

35. In some cases NGOs can provide an important link between local and national concerns. However NGOs' ability to represent local issues can be affected by funding issues with funding being withdrawn after short periods of time and before local structures are in place. In other cases specific

individuals can play a pivotal role bringing together groups who have previously been in conflict. When this individual leaves (often because pay is poor and contracts are short-term) projects can fail because this key linking element has been lost. Funding bodies need to be aware of these issues and to take longer-term views of working in an area.

36. The ecosystem approach supports cross-sectoral working. For this to be effective there needs to be a paradigm change in institutions allowing the ecosystem approach to be incorporated into practical management of agriculture, fisheries, forestry, development planning and other sectors that affect biodiversity. Value for money auditing of government expenditure generally focuses on the economy, effectiveness and efficiency (known as the three 'e's) of a policy's implementation. To align with the principles of the ecosystem approach and to make a more significant contribution to sustainable development government expenditure should also consider the equity and environmental impacts of policy.

## **6. Overriding influence of perverse incentives and conflicting political priorities**

37. Principle four of the ecosystem approach stresses the importance of reducing market distortions that adversely affect biological diversity. The case studies have shown that conflicting government programmes can lead to management decisions which negatively impact on biodiversity, for example under agricultural policy. Conversely, there are also opportunities within government policies for incorporating environmental concerns into schemes and subsidies thereby providing environmental benefits. For example, flood defence schemes can incorporate natural flood defences such as saltmarsh and mangrove swamps.

38. The need to understand the value of the ecosystem goods and services provided by the environment are often poorly understood or not used in decision which can affect their management and maintenance. For example case studies have shown that better valuation of ecosystem goods and services can provide important information for long-term decision making, and provide sustainable economic growth for an area.

39. Government decisions are often based on short-term outcomes over a few years. Ecosystems, particularly those requiring restoration require management plans which run for much longer periods. Policies which only take short-term goals into account and do not consider long-term consequences can have serious negative impacts on biodiversity. For example, flood plain development or conversion of forest to agricultural land can lead to short-term benefits to a few key individuals or business. However long term problems of down-stream flooding or the loss of non-timber products from forests for local communities can have severe negative consequences. The ecosystem approach stresses that decisions should be taken at appropriate temporal scales and management should be set for the long-term.

40. Ecosystems have a key role to play in an integrated approach to disaster risk management. Applying the ecosystem approach to disaster management can have several benefits. It ensures rapid recovery of ecosystems on which local livelihoods depend; it avoids disaster responses that have negative impacts on ecosystem recovery; it enhances communities' capacity to recover their livelihoods and; can benefit improvements to present-day livelihoods while minimising impact of future disasters<sup>5</sup>.

## **7. Limited tools for implementing the approach**

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<sup>5</sup> Masundire, H. 2005 'Applying the ecosystem approach to post-disaster rehabilitation and restoration'. IUCN-CEM June 2005 Workshop, 'Applying an ecosystem approach to post-disaster reconstruction and restoration' Sri Lanka.

41. Decision VII/11 noted the need to ensure the considerable experience already available on the implementation of the ecosystem approach was widely disseminated. This led to the development of an on-line sourcebook by the CBD Secretariat with the aim of making applicable tools and approaches widely available see <http://www.cbd.int/programmes/cross-cutting/ecosystem/sourcebook/tools.shtml>. The sourcebook includes tools on public participation, stakeholder consultation, social factors, education and awareness, governance law and policy, management incentives, data collection and monitoring, protected areas and land use policy, cross-sectoral research and working, and indicators.

42. The analysis of the sourcebook tools and its case studies, and the findings of the MA has identified that further tools are required to secure the sustainable use of natural resources. These include tools to provide an economic valuation of ecosystem goods and services (e.g. through the use of various ecological and environmental economic methods), understanding ecosystem functioning, and understanding ecosystem thresholds and limits. Such tools are valuable for internalising the negative externalities of decisions, and support the polluter-pays- principle. Developing tools for ecosystem goods and services valuation is being developed (see for example <http://www.defra.gov.uk/wildlife-countryside/natres/index.htm>). Other tools that are needed for decision makers include, for example, impact assessment guidelines, best practice manuals, frameworks for assessing how to apply risk analysis to decision making.

43. In all cases efforts are needed to ensure new tools are included in the sourcebook. The tools section of the sourcebook could be greatly increased to take account of the many methods and techniques that have been developed for implementing sustainable approaches to natural resource management such as environmental impact assessment and strategic environmental assessment.

## **8. Using the ecosystem approach**

44. The case studies have highlighted several problems associated with the use of the approach. For example, it is a complex and demanding concept, and often requires a change in institutional philosophy to be used. This type of problem can be overcome with better capacity building, cross-sectoral and disciplinary working, and better communication on what the approach is seeking to deliver (i.e. more than just biodiversity but also human welfare and economic sustainability).

45. It has also been suggested that the principle's wording is too general, which in turn hamper the use of its principles. Several publications have sought to provide advice on the ecosystem approach's application see for example 'Shepherd, G. 2004, 'The ecosystem approach: five steps to implementation'. IUCN, Gland, Switzerland and Cambridge, UK' and the advanced and beginners' user guides on application of the ecosystem approach in the sourcebook <http://www.cbd.int/programmes/cross-cutting/ecosystem/sourcebook/beginner-guide.shtml>.

46. A key strength of the ecosystem approach is its flexibility. It can be applied at a wide range of scales to address diversity of problems in the management of biological diversity and attaining the goals of the CBD. It is important to maintain this flexibility to allow local issues to be addressed appropriately. Its flexibility also allows it to be compatible with objectives of other conventions. Its better application can be fostered through the sharing of expertise from existing project through the sourcebook rather than a re-examination of the principles which would take resources away from its implementation.

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