The Ecosystem Approach

Training module on the Application of the Ecosystem Approach

Training on the application of the ecosystem approach
01 July 2007 Paris, France

The ecosystem approach – basic givens

The CBD (Convention on Biodiversity Conservation) committed itself to the Ecosystem Approach as the main tool for biodiversity conservation at COP 5 in May 2000.

It issued 12 Principles to guide the Ecosystem Approach a couple of years later.

The ecosystem approach is defined as “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way”.

The ecosystem approach – basic givens

The ecosystem approach balances the three objectives of the Convention and is the primary framework for action under the Convention

1. it is based on the application of appropriate scientific methodologies
2. It is focused on levels of biological organization encompassing essential processes, functions and interactions between organisms and their environment
3. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems.

What is the problem that the Ecosystem Approach seeks to address?

- **It is clear that that conservation of biodiversity through Protected Areas alone is not sufficient.**

- **As the Millennium Ecosystem Assessment has shown, biodiversity must become an aspect of broader land management: it cannot be treated in a fragmented way.**
  - many species move between PAs and the broader landscape
  - the hard divide between PAs and the rest of the landscape, causes practical difficulties, separating them by different laws and policies, different managers and different assumptions.

- **The Ecosystem Approach helps to address these issues in the context of social and economic as well as environmental concerns.**

What is the problem that the Ecosystem Approach seeks to address?

Through identifying as many as possible of the goods and services provided by ecosystems to different stakeholders, a more holistic but also more resilient approach to natural resource use and human well-being can gradually be developed.

Ecosystems are best managed through whatever broad governance frameworks are already available. This means that they will contain a variety of intensities of management and a variety of managers, but the whole should ideally add up to more than the sum of the parts.

12 Principles of the Ecosystem Approach

(CBD decision V/6)

1. The objectives of management of land, water and living resources are a matter of societal choice.
2. Management should be decentralized to the lowest appropriate level.
3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.
4. 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:
   (i) reduce those market distortions that adversely affect biological diversity;
   (ii) align incentives to promote biodiversity conservation and sustainable use; and
   (iii) internalize costs and benefits in the given ecosystem to the extent feasible.
5. Conservation of ecosystem structure and functioning, to maintain ecosystem services, should be a priority target of the ecosystem approach.

Principles continued:

6. Ecosystems must be managed within the limits of their functioning.
7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.
8. Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.
9. Management must recognize that change is inevitable.
10. The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.
11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Organising the principles

Because many people found the 12 Ecosystem Principles hard to translate into an agenda for action, they have been organised by IUCN's Commission on Ecosystem Management into **five sequenced steps**, each step involving a range of actions.

The five steps to the implementation of the ecosystem approach are as follows:

- **Step A**
  - Determining the main stakeholders, determining the ecosystem area, and developing the relationship between them
- **Step B**
  - Characterizing the structure and function of the ecosystem, and setting in place mechanisms to manage and monitor it
- **Step C**
  - Identifying the important economic issues that will affect the ecosystem and its inhabitants
- **Step D**
  - Identifying, in due course, the likely impact of the ecosystem on adjacent ecosystems
- **Step E**
  - Deciding on long-term goals, but conceding flexible ways of reaching them

Step A
Determining the stakeholders and defining the ecosystem area

Determining these two, and through iteration arriving at a possible management relationship to link them, is perhaps the most difficult step of all.

Principles related to Step A

1 The objectives of management of land, water and living resources are a matter of societal choice.

7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Step B
Ecosystem structure, function and management

Step B involves establishing the structure and function of the ecosystem, and setting in place mechanisms to manage and monitor it.

Principles related to Step B

2. Management should be decentralized to the lowest appropriate level.

5. Conservation of ecosystem structure and functioning, to maintain ecosystem services, should be a priority target of the ecosystem approach.

6. Ecosystems must be managed within the limits of their functioning.

10.The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Step C

Economic issues

It is important to identify important economic issues that will affect the ecosystem and its inhabitants. Which economic issues will drive management choices in the ecosystem?

Principle related to Step C

4. 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:

i) reduce those market distortions that adversely affect biological diversity;

ii) align incentives to promote biodiversity conservation and sustainable use; and

iii) internalize costs and benefits in the given ecosystem to the extent feasible.

Step D

Adaptive management over space

Management of one ecosystem may affect adjacent ecosystems, even though attempts are made to internalize costs and benefits. E.g. if certain agricultural or livestock-raising practices are disallowed in one ecosystem, they might cluster in the next.

Equally, better management in one ecosystem often induces better management in an adjacent one in due course.

Principles related to Step D

3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

Step E
Adaptive management over time

Planning for adaptive management over time involves long-term goals, and flexible ways of reaching them.

- The management tools used to achieve them must be regularly revisited.
- Good adaptive management requires good monitoring, so that potential problems are spotted early.

Principles related to Step E

7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

8. Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

9. Management must recognize that change is inevitable.

The Ecosystem Approach In Action

Experience seems to show that there are three especially useful contexts for the application of the Ecosystem Approach - two already in active use and one which deserves more focus:

1. AS A FRAMEWORK FOR ANALYSIS

- The Ecosystem Approach is useful for planning, for monitoring and for ex-post analysis to evaluate and draw lessons from what went right and wrong.
- It provides a way both of marking progress against a baseline and of noting incremental change towards final goals.
- It does not offer a pass/fail judgement.
- It highlights management dilemmas and forms, overall, an excellent assessment framework.

The Ecosystem Approach In Action

2. AS A FRAMEWORK FOR IMPLEMENTATION

- For the Ecosystem Approach to go beyond analysis to application, certain preconditions need to be in place.
- It can only be fully applied where people are ready to engage with one another - willing to invest in the shared gathering of knowledge, and to realign management goals where necessary.
- It must be accepted that the Ecosystem Approach is a multi-level approach - national and sub national policy and legal frameworks may be just as important as what is going on within the ecosystem itself. Indeed, it is often the case that until ambiguities are resolved at top government levels, it may be difficult to deal with the local stakeholder issues.
- In the case of Protected Areas, it is important to understand that often the ecosystem manager is only an implementer, and that innovation must be agreed elsewhere.

The Ecosystem Approach In Action

2. AS A FRAMEWORK FOR IMPLEMENTATION (cont)

- When the EsA is applied in a mosaic of different kinds of tenure and different kinds of land-use, it can be an integrative mechanism.
- In the case of Papua, it even has the potential to become a tool for justice and redress for people who have lost their land to investment companies.
- However, several cases show that where goals are not clearly worked out with stakeholders from the start, where absent stakeholders hold all the power, or where there is an ambiguity about management goals, the Ecosystem Approach can provide an analysis of problems, but cannot deliver solutions.

The Ecosystem Approach In Action

3. FOR INTEGRATING CONSERVATION AND DEVELOPMENT

- In non-protected area landscapes, people and their use of landscape and biodiversity are at the centre of ecosystem management.
- Conservation, productivity and sustainability all depend on decisions made by local managers, a majority of whom may be poor farmers or livestock producers.
- In these circumstances an agenda cannot be imposed from outside, and the challenge for any conservation or development agency lies in facilitation, empowerment and incentives. In other words, the economic and governance dimensions of biodiversity cannot be overlooked.
- This reflects the realities of poor people, who best understand ecosystem degradation and environmental risk as threats to their own livelihood strategies.

Case studies

To illustrate these points, five case studies are briefly presented here. They are in:

1. Dryland West Africa (livestock and agricultural landscape)
2. the Congo Republic (logging concession and protected areas in symbiosis)
3. the Mekong in Vietnam (wetland protected area)
4. Indonesian Papua (logging concessions, indigenous people's lands, conservation areas)
5. England, UK (motorway building impact on environment and people's engagement with the process)

The first four studies were completed as part of work on the Ecosystem Approach by IUCN's Commission on Ecosystem Management. The fifth is an English case study carried out by the Joint Nature Conservancy, and has sought to assess how normal planning processes could be improved by reference to the principles of the EA.

Training on the application of the ecosystem approach
01 July 2007 Paris, France

An ecosystem in the north of Congo- Brazzaville

The Challenge:

Managing a forest concession in Congo-Brazzaville in such a way that negative impacts on local indigenous people and on wildlife are successfully reduced.

The EA as a framework for analysis and implementation

- 2 main drivers led to changes in the management of the enormous CIB logging concession in the north of the country.
  - the desire of CIB to be FSC certified – and therefore the commitment to addressing ecological and socio-economic issues not otherwise of commercial interest
  - the presence of the World Conservation Society and the creation of the Nouabali-Ndoki national park on the concession boundaries.

- The symbiosis which developed between the concession and the protected area has benefited both, and both have begun to use a shared Ecosystem Approach framework.

An ecosystem in the north of Congo- Brazzaville

Results

- More options for primate protection
- Huge expansion in elephant population
- Pygmies now have their sacred sites, hunting and gathering sites, and key trees demarcated and respected by the concession
- The Congo government has based new policies on CIB experience

Next adaptive management challenges

- The concession HQ is now the size of a private town – 17,000 people
- Despite CIB control of non-pygmy hunting, and provision of subsidized beef to deflect some subsistence hunting, impact on forest still felt.
- Many of those at CIB's HQ who are not concession employees will have their small businesses diverted to the nearby regional town Ouesso. CIB will build a new river crossing to make this economically attractive to them, and to protect the forest.

Training on the application of the ecosystem approach
01 July 2007 Paris, France

Indonesian Papua (ex Irian Jaya)

The Challenge:

Almost all of Papua is zoned by the National Forest Department into 'forest capability' areas for forest production, conservation, rehabilitation or conversion. No legal space for highly forest-dependent indigenous people at all. Much conflict.

The EA as a framework for implementation

- Head of Forestry in Papua decided to take an Ecosystem Approach to redesignating forest, to take more account of all needs - social, economic and environmental.
- Local mapping of Papua clan lands and uses have been produced for 4 large areas and mapping is being undertaken for the whole Province.
- Overlaying these onto 'forest capability' maps has clarified the values placed on forest by different stakeholders and has provided some potential solutions.

Indonesian Papua (ex Irian Jaya)

- Types of concession management are being diversified within smaller units so that small-scale community logging can take place near to human settlement while large scale commercial logging takes place in remoter areas.

- The same approach will take place in conservation areas with the designation of a more diverse range of zones within the Lorentz National Park – enclaves, ‘indigenous use’ areas, use of wider range of IUCN PA categories, to create sustainable ecosystems. Some boundary areas are being re-designated with local community assistance

Outcomes

- This approach has been presented to the National Level and accepted by them.
- In due course the intention is that it leads to trials in other parts of Indonesia.

Dry-land West Africa (Niger-Nigeria borders)

The Challenge

To understand better how agricultural and forest areas used by migrant herders, by sedentary farmers and by sedentary livestock keepers are being used and conserved under conditions of rapid change and population growth.

The EA as a Framework for analysis

- The research mapped the ecosystems recognised by different kinds of stakeholders, and overlaid them. This demonstrated how varied they were, and where the hotspots and conflict spots were.
- It clarified how much people were already trying to conserve
- It enabled a range of local institutions to see how to work with one another more effectively, and showed which stakeholders currently lack an institutional voice
- Showed how much impact on the ecosystem even markets several hundred miles away were having.

Mekong delta

The Challenge

To take decisions about the main reasons for protecting a Mekong delta wetland site and to manage more actively for those outcomes

The EA as a framework for analysis

- The ecosystem consists of alternating flooded and dry delta flood-plains covered in grasses and Melaleuca forest.
- Most of the delta has been converted to rice paddies, and the protected area is an artificially-maintained example of a previously extensive type of ecosystem.
- In this system, the flooded period would create a vast resource and nursery for Mekong river fish, while the dry period produced nourishing grasses for migratory birds, especially the Sarus Crane, Vietnam's national bird.
- The main purpose of this relic mini-system was thus to preserve a memory of a more extensive area, and to be a key migratory site for cranes.

Mekong delta

So did attempts to exclude poor fishermen from the park make sense? Inventories suggested fish biodiversity was not being negatively affected by local off-take.

Benefit sharing is now being addressed:

- Should fishing be controlled by creating a co-management regime (but would this pull in richer unwanted stakeholders?)
- Create pro-poor rules about allowable fishing tackle and screen out would be richer users that way?
- Continue to allow low-level theft by the poor as at present and turn a blind eye?

The desire to understand more has generated useful fish research, useful socio-economic research, and more understanding of park neighbours and their needs

Training on the application of the ecosystem approach
01 July 2007 Paris, France

M6-Heysham link road route, Lancashire, England

The Challenge: to plan a major new by-pass link road, joining a major motorway which cuts across a beautiful biodiverse landscape

Strengths of the current planning approach

- **The current planning process is based on a well developed democratic process with strong policy and legislative framework**
- **Decision making and management bodies have a wealth of experience**
- **Public consultation and stakeholder involvement are part of the process**

M6-Heysham: Weaknesses of the current planning approach

- There is very little consideration of ecosystem goods and services, how we use them and their importance to human well-being
- Future management beyond the effective functioning of the new road is hardly considered
- The concept of ecosystem function and health, limits and thresholds does not form part of the impact assessment
- Limited valuation of environmental assets and then only at a late stage in the impact assessment
- Public and stakeholder consultation but no joint ownership

M6-Heysham: Dealing with the weaknesses

In development of this type there is very wide-spread public consultation. However, the challenge in delivering the ecosystem approach is:

- **To broaden the scope of the consultation to include ecosystem goods and services and how communities value and enjoy them**
- **To build consultation so that it becomes stakeholder involvement continuing through the planning phase, construction phase and on into participation in adaptive management in the operational phase**
- **To consider issues holistically and look at how areas interact. For example is there a link between economic prosperity and the condition of local habitats?**

M6-Heysham: Dealing with the weaknesses (cont)

The current planning process does not effectively take into account the economic context. For example it does not provide for:

- **measures which would reduce market distortions that affect biological diversity,**
- **incentives designed to promote biodiversity and sustainable development**
- **or ensure that ecosystem costs and benefits are internalised**

Training on the application of the ecosystem approach
01 July 2007 Paris, France

Conclusions from all the case studies

1. **The Ecosystem Approach needs to be at the core of the policy and the culture of the organisation(s) leading the initiative.**
2. **It is essential to identify and interact with the full range of stakeholders at a site, and build a relationship with them for the future.**
3. **To adopt the Ecosystem Approach we need a better understanding of ecosystem health and function, and the thresholds and limits that affect these.**
4. **Economic issues and the way they act to shape ecosystems are not yet well identified or well dealt-with.**

Conclusions from all the case studies (cont)

5 The institutional and governance challenges of the Ecosystem Approach, especially in developing countries with less clear tenure and other arrangements than in developed countries, need thoughtful identification and a commitment to an adaptive management approach.

6. Adaptive management is a challenging concept in many if not most planning contexts. But it is essential to find ways of building it in, since -

- it is impossible to know everything at the start of a process
- Ecosystem management modifies the initial situation and throws up new management challenges over time
- Ecosystem management impacts upon adjacent ecosystems.

Barriers to using the ecosystem approach

- Political/societal obstacles
  - Limited public participation and stakeholder involvement
  - Lack of mainstreaming and integration of biodiversity issues into other sectors, including use of tools such as environmental impact assessments
  - Political instability
  - Lack of precautionary and proactive measures, causing reactive policies.
- Institutional, technical and capacity-related obstacles
  - Inadequate capacity to act, caused by institutional weaknesses
  - Lack of human resources
  - Lack of transfer of technology and expertise
  - Loss of traditional knowledge and use of this knowledge
  - Lack of adequate scientific research capacities to support all the objectives.

Barriers continued

- Lack of accessible knowledge/information
  - Loss of biodiversity and goods and services it provides not properly understood and documented
  - Existing scientific and traditional knowledge not fully utilized.
  - Dissemination of information on international and national level not efficient
  - Lack of public education and awareness at all levels.
- Economic policy and financial resources – we need
  - Better financial and human resources
  - Better economic incentive measures
  - Better benefit-sharing.

Barriers continued

- Collaboration/cooperation – we need
  - synergies at the national and international levels
  - horizontal cooperation among stakeholders
  - effective partnerships
  - engagement of scientific community.
- Legal/juridical impediments
  - Lack of appropriate policies and laws
- Socio-economic factors
  - Poverty
  - Population pressure
  - Unsustainable consumption and production patterns
  - Lack of capacities for local communities.