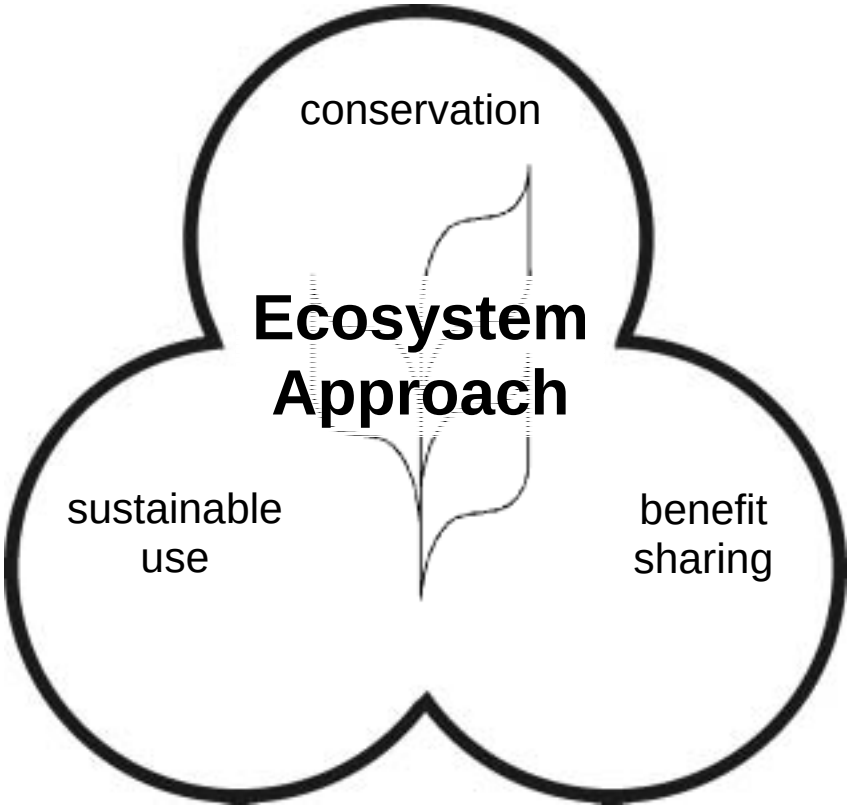
Horst Korn, Rainer Schliep & Jutta Stadler (Eds.)

Report of the International Workshop on the "Further Development of the Ecosystem Approach"



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Report of the International Workshop on the "Further Development of the Ecosystem Approach"

at the International Academy for Nature Conservation
Isle of Vilm, Germany, October 9-11, 2002
– including a compilation of case-studies and lessons learned –

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Introduction

Decision V/6 "Ecosystem Approach" by the fifth Conference of the Parties (COP-5) of the Convention on Biological Diversity (CBD) encourages contracting parties to **further conceptual elaboration** and **practical verification** of the Ecosystem Approach. COP-6 requested in its Decision VI/12 the Executive Secretary of the CBD to develop **proposals for the refinement of the principles and operational guidance** of the Ecosystem Approach **on the basis of case-studies and lessons learnt**. The German Federal Agency for Nature Conservation organised a scientific workshop entitled: „Further Development of the Ecosystem Approach" which was held at its conference centre, the „International Academy for Nature Conservation, Isle of Vilm", from October 9-11, 2002. The meeting was intended to build upon Decision V/6 „Ecosystem Approach" to further elaborate the concept and verify its practical relevance (for wording of the respective COP decisions see background documents).

Experts from 16 countries in Africa, America, Asia, and Europe took part in the workshop on the Isle of Vilm. In addition the Secretariat of the CBD and several international organisations active in the field were requested to participate.

In the program of the workshop a strong emphasis was put on the **clarification of the principles and their underlying concept** as well as on the **presentation of case studies and lessons learnt on the practical implementation** of the Ecosystem Approach.

The 32 participants from environmental ministries, scientific institutions, biosphere reserves, the Secretariat of the Convention on Biological Diversity (CBD), the European Environment Agency (EEA), BirdLife International, the World Conservation Union (IUCN), and the World Wildlife Fund (WWF) attended in their personal capacity as biodiversity experts. The results presented here do not necessarily mean that consensus has been achieved on every individual point.

The workshop was welcomed by the head of the International Academy for Nature Conservation Dr. Hans-Dieter Knapp. The meeting was chaired by Dr. Horst Korn. Case studies and lessons learnt were introduced by consultants and extensively discussed in the plenary. In this report the main points of discussion are summarised and recommendations are given to **help individuals and delegations in their preparation of the revision of the Ecosystem Approach at the ninth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) and COP-7**. The participants of the workshop further elaborated the concept and explored its applicability, discussing several key issues of the Ecosystem Approach and establishing thematic working groups for the elaboration of recommendations to the CBD. The working groups were chaired by Peter Bos, Roger Crofts, John Herity, and Tor-Bjørn Larsson. Mr. Rainer Schliep finished the report with written input from the Chairs, the authors of the case studies and lessons learnt and other participants.

Results and Recommendations of the international Workshop on the "Further Development of the Ecosystem Approach", Isle of Vilm, Oct. 2002

1 Improving the Understanding of the Ecosystem Approach

A. Revision of Principles and Associated Rationales

The **relation of the Ecosystem Approach to other integrated management approaches** was discussed noting that there are no conflicts with other approaches, however, the logical relatedness of the Ecosystem Approach to other approaches (e.g., the sustainable use concept) might need further clarification. The discussion was closed with reference to COP-5 (Decision V/6, para. 5), which provides sufficient guidance according to the relation to "other management and conservation approaches", i.e. the **Ecosystem Approach does not preclude other approaches**, "but could, rather, integrate all these approaches and other methodologies to deal with complex situations. There is **no single way to implement the ecosystem approach**, as it depends on local, provincial, national, regional or global conditions."

The intention with **refining the Principles of the Ecosystem Approach** was to check the consistency, redundancy and hierarchy of the Principles while clarifying their wording and following a more logically sequenced (e.g., in relation to goals and related tools) and re-formulated list of principles. The revised set consists of ten principles for the EA (see table 1 for a review of the modifications).

The re-grouping and refinement of the Principles was linked with a **re-formulation of the respective "Rationales"** in order to clarify

- the logical sequence of the Principles as well as
- the relevance of the Principles to implement integrated management approaches on the ground.

RECOMMENDATION

⇒ The associated Rationales should be further revised.

Tab. 1: Summary table of the revised Principles of the Ecosystem Approach (proposal from Vilm-Workshop, Oct. 2002)

Number	Former number	Principle text
1	1 12	The objectives of management of land, water and living resources are a matter of societal choice involving all relevant sectors of society.
2	10	The ecosystem approach should seek the appropriate balance between, and integration of, conservation and sustainable use of biological diversity as well as the fair and equitable sharing of benefits.
3	6	Ecosystem management must ensure the sustainable provision of ecosystem goods and services.
4	5	In order to maintain the provision of ecosystem goods and services, the conservation of ecosystem structure and functioning is a priority target.
5	2	Ecosystem management should be decentralised to the lowest appropriate level taking into account the linkages with other levels.
6	11 12	Management decisions should be based on all forms of relevant information, including that from all scientific disciplines as well as indigenous and local knowledge, innovations and practices.
7	4	Ecosystem management must consider the relevant economic values, impediments and opportunities including: (a) the reduction of those market distortions that adversely affect biological diversity; (b) the alignment of incentives to promote biodiversity conservation and sustainable use; (c) the internalisation of costs and benefits to the extent feasible.
8	7 3	Ecosystem management should be undertaken at spatial and temporal scales appropriate to the objectives taking into consideration effects on adjacent and other ecosystems.
9	8	Ecosystem management should set objectives for the long term recognising the varying temporal scales and lag effects that characterise ecosystem processes.
10	9	Ecosystem management should adopt adaptive management strategies recognising the inherent dynamics of change and uncertainties in ecosystems.

B. Revised text of Principles and Rationales of the Ecosystem Approach

The following 10 principles are complementary and inter-linked:

Principle 1: The objectives of management of land, water and living resources are a matter of societal choice involving all relevant sectors of society.

Rationale: Different sectors of society view ecosystems in terms of their own economic, cultural and societal needs. Indigenous peoples and other local communities living on the land are important stakeholders and their rights and interests should be recognised. Both cultural and biological diversity are central components of the ecosystem approach. Management should take this into account and involve all relevant stakeholders at the local, national, regional and international level, as appropriate. Management of natural resources, according to the ecosystem approach, calls for increased inter-sectoral communica-

tion and co-operation at a range of levels (government ministries, management agencies, etc.). This might be promoted through, for example, the formation of inter-ministerial bodies within the government or the creation of networks for sharing information and experience. In this view the ecosystem approach should be fully taken into account in developing and reviewing national biodiversity strategies and action plans, and thus be integrated into agriculture, fisheries, forestry and other production systems that have an effect on biodiversity. Societal choices should be expressed as clearly as possible.

Principle 2:	The ecosystem approach should seek the appropriate balance between, and integration of, conservation and sustainable use of biological diversity as well as the fair and equitable sharing of benefits.

***Rationale*:** Biological diversity is critical both for its intrinsic value and because of the key role it plays in providing the ecosystem and other services upon which we all ultimately depend. 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 continuum from strictly protected to human-made ecosystems. Ecosystems should be managed for their intrinsic values and for the tangible or intangible benefits for humans, in a fair and equitable way.

Benefits that flow from the array of functions provided by biological diversity at the ecosystem level provide the basis of human environmental security and sustainability. The ecosystem approach seeks that the benefits derived from these functions are maintained or restored. In particular, these functions should benefit the stakeholders responsible for their production and management. [This requires, inter alia: capacity-building, especially at the level of local communities managing biological diversity in ecosystems; the proper valuation of ecosystem goods and services; the removal of perverse incentives that devalue ecosystem goods and services; and, consistent with the provisions of the Convention on Biological Diversity, where appropriate, their replacement with local incentives for good management practices.]

Principle 3:	Ecosystem management must ensure the sustainable provision of ecosystem goods and services.

Rationale: In considering the likelihood or ease of attaining the management objectives, attention should be given to the environmental conditions that limit natural productivity, ecosystem structure, functioning and diversity, which in turn provide the basis of human environmental security and sustainability. The limits to ecosystem functioning may be affected to different degrees by temporary, unpredictable or artificially maintained conditions and, accordingly, management should be appropriately cautious.

Principle 4:	In order to maintain the provision of ecosystem goods and services, the conservation of ecosystem structure and functioning is a priority target

Rationale: Ecosystem functioning and resilience depends on a dynamic relationship within species, among species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment. Although these interactions are not always well understood, ecosystem management has to be carried out even in the absence of the full knowledge of functional biodiversity. A much better knowledge of ecosystem functions and structure, and the roles of the components of

biological diversity in ecosystems, is required [, especially to understand: (i) ecosystem resilience and the effects of biodiversity loss (species and genetic levels) and habitat fragmentation; (ii) underlying causes of biodiversity loss; and (iii) determinants of local biological diversity in management decisions]. Conservation and, where appropriate, restoration of the interactions within and between species and with the environment and related processes is of greater significance for the long-term maintenance of biological diversity than simply protection of species.

Principle 5:	Ecosystem management should be decentralised to the lowest appropriate level taking into account the linkages with other levels.

Rationale: Decentralised systems may lead to greater efficiency, effectiveness and equity. Ecosystem management should involve all stakeholders and balance local interests with the wider public interest. The closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation, and use of local knowledge.

Principle 6:	Management decisions should be based on all forms of relevant information, including that from all scientific disciplines as well as indigenous and local knowledge, innovations and practices.

Rationale: Most problems of biological-diversity management are complex, with many interactions, side effects and implications. Therefore, information from all sources is critical to arriving at effective ecosystem management strategies. A much better knowledge of ecosystem functions and the impact of human use are desirable. All relevant information from any concerned area should be shared with all stakeholders and actors, taking into account, inter alia, any decision to be taken under Article 8(j) of the Convention on Biological Diversity. Assumptions behind proposed management decisions should be made explicit, involve the necessary expertise and checked against available knowledge and views of stakeholders.

Principle 7:	Ecosystem management must consider the relevant economic values, impediments and opportunities including: (a) the reduction of those market distortions that adversely affect biological diversity; (b) the alignment of incentives to promote biodiversity conservation and sustainable use; (c) the internalisation of costs and benefits to the extent feasible.

Rationale: The greatest threat to biological diversity lies in its replacement by alternative systems of land use. This often arises through market distortions, which undervalue natural systems and populations and provide perverse incentives and subsidies to favour the conversion of land to less diverse systems.

Often those who benefit from conservation do not pay the costs associated with conservation and, similarly, those who generate environmental costs (e.g. pollution) escape responsibility. Alignment of incentives allows those who control the resource to benefit and ensures that those who generate environmental costs will pay

Principle 8:	Ecosystem management should be undertaken at spatial and temporal scales appropriate to the objectives taking into consideration effects on adjacent and other ecosystems.

Rationale: Application of ecosystem approach should be bounded by spatial and temporal scales that are appropriate to the objectives. Boundaries for ecosystem management will be defined operationally by users, managers, scientists and indigenous and local peoples. Management interventions in ecosystems often have unknown or unpredictable effects on other ecosystems; therefore, possible impacts need careful consideration and analysis. Connectivity between areas should be promoted where necessary. The ecosystem approach is based upon the hierarchical nature of biological diversity characterised by the interaction and integration of genes, species and ecosystems. This may require new arrangements or ways of organisation for institutions involved in decision-making to make, if necessary, appropriate compromises.

Principle 9:	Ecosystem management should set objectives for the long term recognising the varying temporal scales and lag effects that characterise ecosystem processes.

Rationale: Ecosystem processes are characterised by varying temporal scales and lag-effects. This inherently conflicts with the tendency of humans to favour short-term gains and immediate benefits over future ones.

Principle 10:	Ecosystem management should adopt adaptive management strategies recognising the inherent dynamics of change and uncertainties in ecosystems.

Rationale: Ecosystems change, including species composition and population abundance. Hence, management should adapt to the changes. Apart from their inherent dynamics of change, ecosystems are beset by a complex of uncertainties and potential "surprises" in the human, biological and environmental realms. Traditional disturbance regimes may be important for ecosystem structure and functioning, and may need to be maintained or restored. The ecosystem approach must utilise adaptive management in order to anticipate and cater for such changes and events and should be cautious in making any decision that may foreclose options, but, at the same time, consider mitigating actions to cope with long-term changes such as climate change

Therefore, ecosystem management must involve a learning process, which helps to adapt methodologies and practices to the ways in which these systems are being managed and monitored. There is also a need for flexibility in policy-making and implementation. Long-term, inflexible decisions are likely to be inadequate or even destructive. Ecosystem management should be envisaged as a long-term experiment that builds on its results as it progresses. This "learning-by-doing" will also serve as an important source of information to gain knowledge of how best to monitor the results of management and evaluate whether established goals are being attained. In this respect, it would be desirable to establish or strengthen capacities of Parties for monitoring.

C. Improving Guidance on the Ecosystem Approach

There is the need to identify elements for guidance on more effective implementation of the Ecosystem Approach, i.e. an interpretation how to apply the Ecosystem Approach on the ground. Proposals were provided by the CBD Liaison Group Meeting at Paris in 1999 and laid down in SBSTTA document "Ecosystem Approach: Further Conceptual Elaboration" (UNEP/CBD/SBSTTA/5/11), Annex II on the "Elaboration of Guidance and Actions for Each of the Malawi Principles by the Liaison Group" (see background

documents). The Liaison Group proposed actions aimed at implementing each Principle and provided further guidance on their practical implementation.

RECOMMENDATION

⇒ The proposals of the CBD Liaison Group Meeting at Paris in 1999 laid down in SBSTTA document "Ecosystem Approach: Further Conceptual Elaboration" (UNEP/CBD/SBSTTA/5/11), Annex II should be resumed, checked and revised in order to develop specific actions for the implementation of the Principles.

2 Creating an Enabling Environment for the Application of the Ecosystem Approach

The creation of an enabling environment for the application of the Ecosystem Approach of the CBD needs to take into account political, social and economic aspects on the global, national and regional level of integrated ecosystem management. Amongst other references, the CBD adopted in its Decision V/6 an Operational Guidance for application of the Ecosystem Approach (see background material) and acknowledges in point 4 of the guidance that the Ecosystem Approach will imply the proper empowerment of stakeholders on the level of local communities which needs to be supported by enabling policy and legislative framework.

The Global Environment Facility (GEF) in its Operational Program #12 (Integrated Ecosystem Management) refers to the development of appropriate policies, regulations and incentive structures in the political, legislative and economic realm as part of creating an enabling environment to support integrated ecosystem management (GEF 2000).

Taking into account the complexity of the task in the following the most essential measures to be undertaken are identified on the basis of a specified list of tasks and target groups to be addressed.

Important conditions to be created:

- Institutional and legal framework
- Planning system
- Knowledge and information
- Political commitment (provided it reflects what society really wants)
- Participation
- Technical capacity
- Awareness
- Mainstreaming in sectors
- Ensuring livelihoods (tenure, certainty, long term perspective)
- Communication and co-operation (in particular scientists-managers)
- National Biodiversity Strategy and Action Plans (NBSAPs)
- Monitoring system
- Regional co-operation
- Economical and social incentives (improved markets as benefits)

Target groups:

N.B. It is necessary to specify whether target groups are addressed at the international, national, regional or local level. Targeting at several levels at the same time may also be the case.

- Political decision makers

Formal authorities:

1. Conservation

2. Others: e.g. Agriculture, water management, traffic, research, forestry, fishery, land use, development

3. Interaction between managers in 1. and 2., and within each sector

- Traditional authorities (moral and social authority, e.g. indigenous/religious leaders)
- Economic interest groups/private sector (logging, mining, tourism)
- Local stakeholders/ users and traders
- Non-governmental organisations (NGOs)
- Donor community

Measures

'Conditions' and 'Target groups' are related to each other, and a matrix could be constructed to illustrate the specific relationships, with each cell specifying measures (actions, activities, initiatives). Six essential measures are

1. Applying tools for participation
- Capacity building
- Adapt existing tools for participatory/interactive decision making to the needs of the Ecosystem Approach
- Enable societal choice (see Principles) by facilitating involvement in:

  i) Decision making/planning
  ii) Implementation of Ecosystem Approach plan
  iii) Monitoring
- Adaptive learning

2. Public awareness raising
- Formulation of a communication strategy for the Ecosystem Approach
- Sensitivity for the Ecosystem Approach
- Knowledge of the benefits of and incentives for the Ecosystem Approach (short term as well as long term)
- Clarification of relationship with existing, similar approaches
- Creating partnerships on concrete issues/products

3. Create sustainable benefits to enhance support for implementation of Ecosystem Approach and management plans
- Taxes, subsidies, funding
- Long term security about tenure,
- Ecosystem Approach plan as framework for solving conflicts
- Benefits from resources

4. Elimination of perverse incentives
- Identification of such perverse incentives
- Internalisation of environmental cost (" polluter pays")/ removing subsidies etc.

5. Institutional strengthening and co-operation
- Partnerships between sectors, authorities, users etc. (concrete issues)
- Harmonisation of laws
- Reinforcement/capacity building
- NBSAP's
- Cross-sectoral strategies for integration
- Strategic Environmental Impact Assessments
- Regional co-operation

6. Information - knowledge - capacity

- Technical capacity building
- Access to and sharing of information
- Sharing and applying existing knowledge, especially local and indigenous
- Adapt research better to management needs
- Communication between scientists, local knowledge and managers (to share and synthesise)

3 Lessons Learnt from Case Studies - Learning from Experience

Introductory Remarks

Lessons learnt from case studies were reviewed, with particular emphasis on the general report from the IUCN/RHIER Pathfinder Workshops. Other lessons can be drawn from various SBSTTA meetings and other workshops (Vilm 1999, Battleby 1999, 16th GBF: Workshop on "Managing Forest Ecosystems for Sustainable Livelihoods" (see chapter "Historical Background of the Ecosystem Approach and Current Debates" in this publication), the Millennium Ecosystem Assessment etc).

General Conclusions

- There is only limited experience of strict application of the Ecosystem Approach, although some studies are modified to take account of the Ecosystem Approach or even are set up taking the Ecosystem Approach into account.
- There are many valuable case study examples of use of some elements of the Ecosystem Approach which should not be ignored. Although often the approach taken in these examples is not explicitly called 'Ecosystem Approach', actually it is (partially) applied.
- It is appropriate to use existing case studies as a basis for promoting (implicitly or explicitly as appropriate in the circumstances) the Ecosystem Approach.

RECOMMENDATIONS

⇒ Parties, intergovernmental and non-governmental organisations and other relevant institutions are strongly encouraged to submit lessons from all case studies to benefit those already active and for those yet to start the process.

⇒ The Secretariat should collect and disseminate through the Clearing House Mechanism (CHM) case studies which have all or any elements of the Ecosystem Approach to enable everyone to gain from others experience.

Framework for Analysis

Depending on the questions being asked the analysis of case studies may encompass: the applicability and relevance of the Ecosystem Approach Principles, stakeholder views, problem/solution approaches as well as thematic and cross-cutting issues, and where possible recognise regional/national differences.

RECOMMENDATIONS

⇒ For the purpose of analysing case studies we do not recommend the use of the five points of Operational Guidance as they are insufficiently detailed or too comprehensive for this purpose.

⇒ The COP should adopt as an example for analysis the framework from the *Pathfinder Workshops* as follows:

- problem statement,
- description of project,
- features of case studies that highlight key aspects of the Ecosystem Approach,
- lessons learnt.

⇒ The COP should adopt an approach to measuring progress and stimulating further progress by

(1) testing each case study against the Ecosystem Approach Principles at both first order level (have they been used and to what extent) and at second order level (what has stopped use/full use of a particular Principle) and

(2) testing each case study against relevant stakeholders' perspective in order to build on consensus achieved and build alliances.

⇒ The agreed framework should be widely disseminated to the Parties and to others involved in the Ecosystem Approach at all levels (international, regional, national, regional and local) inter alia through the CHM.

Gaps in Case Studies

Recognising that

- only 3 regions were formally covered by the Pathfinder Workshops and that there is detailed information and an overview available on the web (www1.rhbnc.ac.uk/rhier/iucn.htm), and,
- many case studies in other regions are not readily accessible and not documented or analysed in the way recommended above;

RECOMMENDATIONS

⇒ Those regions not currently documented should be covered: North America (including those case studies cited in the Inter Agency Task Force report), Central America (including those in Nicaragua, Costa Rica, and the Cordillera), Caribbean, Europe (including those presented at the two meetings in Vilm and at the Battleby, Scotland meeting 1999), Eurasia (including steppe and boreal forest studies), Oceania (including Land care), Central-South Africa (including Sahel, forest certification),

⇒ Case studies of particular ecosystems/biomes should be included in regional reviews in order not to emphasise ecosystems as the basis of case studies but rather the definition of particular problems at the appropriate geographical scale which require resolution. Ensure coverage of high latitude, mountains, small islands, steppe, marine, coastal zone, cultural landscapes (especially in Europe)

⇒ Case studies should be logged and disseminated.

⇒ The Secretariat should:

(1) request Parties to gather case studies and submit them to CBD Secretariat which should make them available to all interests through the CBD's CHM web site, and

(2) organise/facilitate regional workshops to gather material on geographical and thematic studies (and therefore sharing experience and helping to promote the Ecosystem Approach) and to disseminate results to all Parties.

Promoting the Ecosystem Approach

The case studies, as they evolve over time, are an essential contribution to, and mechanism for, promoting the Ecosystem Approach. It can be done either implicitly or explicitly depending on the local circumstances and the sensitivity of the individual stakeholders.

RECOMMENDATIONS

The CBD Secretariat should:

⇒ communicate that case studies are a valuable mechanism in promoting the Ecosystem Approach to all Parties at all levels.

⇒ commission analysis of case studies where objectives are social/economic (e.g. poverty alleviation, development of social justice) in order to make linkages with the environmental issues which are likely to be part of the solution and which can be addressed under the Ecosystem Approach.

Issues for Resolution[1]

Several issues arising from case studies require resolution to allow further progress in implementing the Ecosystem Approach.

- **Temporal scale**: this should be approached from the standpoints of problem resolution (i.e. how complex is the problem and what amount of time is likely to be required to have all information available to help in its resolution) and the length of time likely to be needed to achieve a collaborative and co-operative approach between all of the stakeholders (noting that different stakeholders often have a different time horizon)
- **Spatial scale**: again this should be determined in relation to the problem requiring resolution and therefore can range from a very small unit (a site) up to a very large unit such as a major mountain chain or major river basin. It will also be essential to take into account issues beyond the boundaries where there are likely to be impacts, such as a mountain system on the surrounding river basins ("problem-shed").
- **Decision-making**: a devolved and participatory approach is vital, but the frame of reference of the higher authorities has to be taken into account. Independent analysis of factors that contribute to the success or the failure of case studies should be undertaken. This should be undertaken at an appropriate time and in an appropriate manner, which will not destabilise the progress made and not undermine the progress towards shared goals and objectives and the actions needed to achieve them.
- **Science**: very often the scientific knowledge and information available has not been used sufficiently to inform the process of the problem solving, though recognising that knowledge and information will

[1] Some are derived from the summary of the *Pathfinder Workshops*, some from knowledge of individual projects presented at this and other recent workshops, some from the direct experience of participants in this group.

never be perfect and complete. The available science should be integrated into the process. More research relevant to the situation under review should be undertaken particularly on carrying capacity and the tolerance thresholds of ecosystems.

- In the light of the lack of all of the scientific information needed then we recognise that the use of **adaptive management** approaches and of the **precautionary principle** are both necessary and valid.
- **Vision**: No real progress can be made unless there is a clear and shared vision of the desired outcomes from the project aimed at resolving the problems identified. This can only be achieved with a visioning process, which is truly inclusive of all relevant stakeholders, and with meaningful participation. An iterative visioning process is essential to ensure the shared vision and to allow review/revision of the shared vision as the project progresses and hence conditions change.
- **Enabling environment**: Many components of the capacity of institutions need to be changed or improved. Briefly, the following may be the most critical:
  - institutional culture, i.e. the desire and willingness to change and to create solutions,
  - legal, i.e. the preparation and approval of new measures to suit the circumstances and the reform of old measures,
  - procedures, i.e. to remove blockages to progress and to speed up decision making etc.
- **Instruments**: It is always preferable to design instruments for the purpose rather than seek to adapt existing ones, which were designed for a different purpose. However, it may only be possible to adapt existing instruments because of institutional inertia or time constraints.

4 Monitoring of Progress

Main conclusions:

1. Reporting on progress of countries in the implementation of the Ecosystem Approach to COP is desirable and feasible.
2. The operational guidance could be used as a structure for this reporting more easily than the Principles, which in their present form are difficult to consider separately from each other. It seems possible to formulate specific sub-questions to each of the five points of operational guidance.
3. To monitor the application of the five points of guidance for the implementation of the Ecosystem Approach, a new type of integrated indicators is needed. In some cases considerable efforts at development will be necessary.
4. As a result of this, the two-step approach for biodiversity indicators as endorsed by COP 4 should be applied. The first step of national reporting will thus have to focus on indicators, which are available in the short term.
5. In this context, use could be made of the information contained in existing national reports of CBD and other relevant international agreements and processes (Ramsar, UN Forum on Forests, FAO resource assessments, Millennium Ecosystem Assessment etc.)
6. As a preparation to the further development of a national reporting framework, in-depth test studies in individual countries should be encouraged and presented on the Clearing-House Mechanism. These studies could draw on the following suggestions in a more comprehensive way.

Suggestions for indicators and targets relating to the points of operational guidance:

1. Focus on the relationships and processes within ecosystems:

Examples of potential indicators:
- state of development of integrated indicators reflecting ecosystem goods and services, for example indicators of ecological integrity or ecosystem health/condition;
- existence of indicators reflecting the sustainability of current use of ecosystems;
- existence of indicators reflecting functional relationships, like nutrient flows, water balance etc., within and between different ecosystems (land/water ecosystems);
- existence of research capacity to investigate ecosystems in an integrated way.

Note on target setting: Target-setting for management in accordance with this point of guidance requires the existence of established references for ecosystem functioning. Also knowledge is needed to identify critical thresholds.

2. Enhance benefit-sharing:

Examples of potential indicators:
- Description and quantification of the benefits from the use of elements of ecosystems (monetary, tax revenues, direct consumption, natural assets, direct protective benefits) and
- the distribution of benefits over income groups and/or regions (e.g. poor rural regions;)
- description of policies and programmes influencing the distribution (e.g. changes in taxation, user rights)

Example of possible targets: improvement of the position of the rural poor in accordance with the Millennium Development Goals

3. Use adaptive management practices:

Potential indicators:
- Existence of procedures to identify uncertainties in ecosystem management (e.g. frequency of natural hazards, risk of sudden changes in ecosystem properties, risk of unforeseen effects of management);
- measures to deal with these uncertainties on a policy and project level (integration of monitoring and feedback loops into management procedures; iterative planning processes)

Target outline: adaptive management is achieved (e.g. adjustable operational targets are applied)

4. Carry out management actions at the scale appropriate for the issue being addressed, with decentralisation to lowest level, as appropriate:

Potential indicators:
- Indicators describing the vertical distribution of decision-making capacity with relevance to the components of the ecosystem (water, forests…) and to financing (taxation, subsidies etc.);
- procedures for stakeholder involvement at different levels

Target outline: appropriate distribution of responsibilities and decision-making capacity on all levels with regard to the scale of the problem, including control mechanisms

5. Ensure inter-sectoral co-operation:

Potential indicators:

- existence of inter-agency strategies and/or formalised co-operation (in the form of co-operation bodies etc.);
  this indicator has to be developed on the basis of a description of sectoral responsibilities

Target outline: co-operation mechanisms in place and operating

Summary of Discussions and Suggestions for further Consideration

Opening the discussion on the presentation of case studies and lessons learnt, a list of problems and questions concerning the Ecosystem Approach were identified:

- Some of the Principles of the Ecosystem Approach were not agreed by all Parties.
- The overall concept and explanation frame of the Ecosystem Approach needs clarification.
- Must the Principles of the Ecosystem Approach be seen as a package, or might a stepwise implementation be feasible?
- The relationship of the Ecosystem Approach to other approaches needs clarification.
- There is a lack of guidelines for the application of the Ecosystem Approach in the field.
- There is a need for capacity building.
- There is a need for public awareness.
- There is a need for economic incentives.
- What is the role of adaptive management?
- How can we promote active participation?
- Scale-related issues need to be clarified.
- Monitoring-related issues need to be clarified.

The comments on the studies and lessons learnt can be summarised according to the following key issues:

- **Further clarification of the concept of the Ecosystem Approach**
  A further clarification of the concept of the Ecosystem Approach was felt to be urgent by most of the participants as there are **different perceptions on ecosystems** by politicians, scientists, or local stakeholders. The Ecosystem Approach might be seen as a **codification** of already existing integrated sector management approaches. It should be made clear whether the Ecosystem Approach is a **framework or a modus operandi** for ecosystem management.
  Specific terms used in the Principles of the Ecosystem Approach need clarification, e.g. the utilisation of **terms** such as ‘change’ and ‘limits of functioning’. Some participants expressed the demand to **focus the Ecosystem Approach on key causal elements**, however, others suggested the explicit consideration of additional issues, e.g. the restoration of ecosystems as well as of ‘slow variables’ (underlying causes) in ecosystems.
  The **role of objectives, monitoring and indicators needs to be further clarified** in the concept of the Ecosystem Approach.

- **Relation of the Ecosystem Approach to other concepts and approaches**
  Generally, the linkage with current issues such as climate change and WSSD needs to established. The Ecosystem Approach has not to be seen in competition with other integrated management approaches, however, the debate on the Ecosystem Approach **might not be sufficiently connected to the international debate on integrated management**. Albeit there is a **strong conceptual link to**

the MAB Programme, the relation to the sustainable use concept, however, needs further clarification. The ongoing diversification of resource management regimes was suggested to be reflected in the Principles of the Ecosystem Approach. Thus, the **Ecosystem Approach should benefit from synergies** with other integrated sector approaches, e.g. in agriculture programmes or in integrated water resources management.

In bi-lateral development co-operation, funding generally is more focused on poverty reduction. As the Ecosystem Approach is especially important for people in rural areas directly depending on their natural environment and the development of livelihood is crucial for them, there should be an **improved balancing of the Ecosystem Approach according to conservation and sustainable use** when considering poverty reduction: poverty alleviation and the Ecosystem Approach are two sides of the same medal!

- **Improving the understanding of the Ecosystem Approach Principles**

  Generally the Principles of the Ecosystem Approach are supported, however, there are stated difficulties to explain and to apply them. The participants agreed that the name of the Ecosystem Approach creates confusion as it is of ambiguous meaning (concept and object). There was a clear consensus, that the understanding of the Principles needs to be improved. It was suggested to **introduce a hierarchical or logically sequenced order** to the set of Principles and to **reduce the number of principles** by grouping them. The issues of societal choice, decentralisation and involvement of all relevant sectors of society were seen in context and predominant. However, the **Ecosystem Approach still lacks a clear distinction between facts and values** and it should be distinguished between the level of politics, which is related to societal choices, and the level of science, which provides facts as a basis for societal choice. The Principles of the Ecosystem Approach should thus be checked according to their:

  1. Consistency
  2. Redundancy
  3. Hierarchy

  Some issues related to equity and livelihood cannot be addressed within the Principles.

- **Societal choice**

  Concerning the **societal choice** issue there were uncertainties on the **meaning** of the term 'societal choice' among the participants while there are different perspectives possible. However, societal choice has to be seen in the **context of governance**. The extent of the implementation of Principles 1 and 2 might vary from country to country (see below: Improving the implementation of the Ecosystem Approach).

  Some case studies presented concluded that an **early involvement of stakeholders** is necessary and that **effective information management** as well as an **open decision-making process** is essential for the active participation of the public. However, there often is a **lack of motivation** for stakeholders to participate while the decision-making process demands complex negotiations on **long-term visions and objectives** as well as on **trade-offs between competing interests**. Societal choice is most effective after **thorough public discussion** and tools for its **support** are still needed.

- **Inter-linkage of institutions and administrative structures**

  Institutional mismatch and mismatch of administrative structures were a common concern ex-

pressed by the participants. This is partly due to competing responsibilities of different ministries etc. For integrative management flexibility of bureaucracy as well as cross-sectoral integration is needed.

Concerning the vertical linkage of institutions, the participants expressed the need for an improved balance between national and regional interest. In addition to the suggestions of the Ecosystem Approach Principles the participants emphasised the need for a multi-level perspective and for the link of top-down with bottom-up approaches. This inter-linkage of centralisation and decentralisation must be effectively organised. The participants also expressed their conviction that decentralisation cannot be seen as universal solution to institutional mismatches. Congruence in governance between different levels must be ensured and the integration of different ways of thinking (science, management) should be facilitated.

- **Scale-related issues**

  The issue of scale is cross-cutting the different aspects of the Ecosystem Approach as expressed by the participants and underlined by the presented case studies and lessons learnt:

  The Ecosystem Approach balances all three objectives of the CBD, however, are there **scale-related priorities?**

  The Ecosystem Approach needs to tackle the **divergence of common national/regional goals and local interests** as well as the **tension between large-scale interests of economy and regional management objectives**.

  The **integration of different ecosystems** is crucial, but at what scale?

  The participants suggested further discussion on the **relation of decentralisation and the empowerment of local communities with scale.** The presentations underlined the **significance of scale-related effects for decision-making**.

- **Market-related issues**

  The Ecosystem Approach should consider economic, environmental as well as social benefits. This includes the allocation of long-term vs. short-term benefits and the balancing of all costs and benefits. An inter-regional compensation mechanism (economic incentives) is needed with respect to the fact that biodiversity and related costs for its preservation are spatially uneven distributed. Ecosystem management should generate win-win-solutions (conservation and increased income). However, ecosystem management has to take into account that market can be a distortion for biodiversity.

- **Science for ecosystem management**

  Participants stated that there is a **lack of scientific knowledge** to apply the Principles of the Ecosystem Approach. **Research and monitoring** are necessary prerequisites of the implementation of the Ecosystem Approach. **Adaptive management needs indicators**, while there needs to be **more effort in the development of indicators**. Science driven ecosystem management tends to result in problems of acceptance with local stakeholders as case studies in Germany suggest.

- **Adaptive management**

  Adaptive management is judged an innovation providing the answer to uncertainty in ecosystem structure and functioning. It is seen in contrast to existing static arrangement of institutions.

- **Capacity building, public awareness**
  There is a **lack of capacity** to implement the Ecosystem Approach in many countries. The Principles of the Ecosystem Approach could provide a **framework for analysis** of ecosystem management and **ensure accountability and transparency** for ecosystem managers.
  However, except by specialists the **Ecosystem Approach is hardly known as a management concept**. Thus, an **improved public awareness is urgent**.

- **Participation**
  For the **involvement and empowerment** of stakeholders, information sharing is crucial. Allies between stakeholders might be necessary. There is an **inherent conflict** in ecosystem management between local stakeholders and 'higher' levels.

- **Improving the implementation of the Ecosystem Approach**
  There was consensus between the participants that the Principles of the Ecosystem Approach should be seen as inter-linked and complementary, however, in some cases a **stepwise approach to the implementation of the Ecosystem Approach** appears to be useful, i.e. from simple management approaches to complex management schemes. The question arose if the Principles must be seen as a package or if there is enough **flexibility** in the Ecosystem Approach to start applying some principles to projects and add others in time. The **establishment of an implementation mechanism** (e.g. trust) was suggested.

Historical Background of the Ecosystem Approach and Current Debates

A Brief History of the Development of the Ecosystem Approach within the Framework of the Convention on Biological Diversity

JUTTA STADLER

1 Description of the Ecosystem Approach

At present the Ecosystem Approach within the framework of the CBD is described as "… a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way." (COP Dec. V/6, see background material). Thus, the application of the Ecosystem Approach will help to reach a balance of the objectives of the Convention by taking into account ecological, economic and social aspects. The Ecosystem Approach also recognises that humans, with their cultural diversity, are an integral component of many ecosystems.

The application of the Ecosystem Approach requires adaptive management practices while not precluding other management and conservation approaches but rather integrating them to deal with complex situations.

The description of the Ecosystem Approach is in line with the CBD definition of the term 'ecosystem' (Art. 2): „'Ecosystem' means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit." In contrast to the Convention's definition of 'habitat' this definition does not specify any particular spatial unit or scale. Thus, the term 'ecosystem' does not, necessarily, correspond to the terms 'biome' or 'ecological zone' but can refer to any functioning unit at any scale. Therefore, the scale of analysis and action should be determined by the issue being addressed (this may be a pond, a catchment area, a biome, the biosphere etc.).

2 Conceptual Roots Outside the CBD Process

The term 'Ecosystem Approach' as well as the concept standing behind the approach partly originate in a discussion process on 'ecosystem management' which started in the USA and Canada in the late 1980s and early 1990s. Strategies of a more holistic approach to the management of natural resources also considering stakeholder participation and co-operation between different sectors of management were discussed among United States federal agencies (INTERAGENCY ECOSYSTEM MANAGEMENT TASK FORCE 1995). In parallel, related issues were discussed in Canada (TASK GROUP ON ECOSYSTEM APPROACH AND ECOSYSTEM SCIENCE 1996). Although these processes in the USA and Canada were not directly connected with the debates held in the fora of the CBD, they provided some basic input to the latter.

The debates on the Ecosystem Approach under the CBD were also influenced by ongoing processes in other international fora, e.g. the discussions on the concept of 'wise use' developed under the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar Convention).

3 Development of the Ecosystem Approach under the CBD

The Origins

At its first meeting the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the CBD discussed on how to address the conservation of biological diversity from a wider perspective (UNEP/SBSTTA/1/4): "…the Convention recognises the need to take a holistic and not merely a conservation-oriented approach to action to address the threatened components of biological diversity (highlighted by the author). Accordingly, this note and its annexes look at the conservation approaches while highlighting the need to integrate these across a broader spectrum of action. …The CBD was born at least partially because traditional conservation methods were found lacking in stemming the loss of biological diversity. The Convention sets a new context for considering biological diversity which recognises the causes of biodiversity are complex and multi-facetted and that action to address the loss must therefore reach beyond traditional approaches. … In this context, it is critical that socio-economic and other issues share the centre stage with the more purely biological considerations….".

In the same document suggestions are given on how to assess the status and threat of components of biological diversity on the three levels: genetic level, species level and ecosystem level. The discussions led to SBSTTA recommendation I/3[2] which was reaffirmed by the COP at its second meeting (see box 1).

Box 1

Decision II/8:
"… the conservation and sustainable use of biological diversity and its components should be addressed in a holistic manner, taking into account the three levels of biological diversity and fully considering socio-economic and cultural factors. However, the ecosystem approach should be the primary framework of action to be taken under the Convention."

Even though the term 'Ecosystem Approach' was introduced for the very first time in the SBSTTA recommendation it was used here rather to plead for a focus on functional units when referring to conservation and sustainable use of components of biological diversity.

At this time no definition of the Ecosystem Approach was given, nor was there a common understanding of the holistic concept referred to in the decision. This situation was also reflected by the fact that in subsequent CBD documents and decisions a consistent terminology was lacking (see box 2). The need for clarification and further elaboration of the concept was apparent.

[2] Recommendation I/3: "Conservation and sustainable use of biological diversity and its components should be addressed in a holistic manner, taking into account the three levels of biological organization (genomes and genes; species and communities; and ecosystems, habitats and landscapes) and fully considering socio-economic and cultural factors. However, the ecosystem approach should be the primary framework of action to be taken under the Convention." *(text which was not reflected in the COP decision highlighted by the author)*

Box 2

Terms used in thematic and cross-cutting programmes of work of the CBD:

- Ecosystem approach
- Ecosystem process-oriented approach
- Ecosystem management approach
- Ecosystem-based approach
- Integrated approach
- Holistic approach
- ...

(STADLER in: KORN et al. 1999)

Developmental Stage until COP-5

From the very beginning, international NGOs played a major role in developing and promoting the Ecosystem Approach within the CBD. To name but one example, in 1996 participants of the 'Sibthorp seminar', a workshop supported by the Sibthorp Trust, the Royal Holloway University of London, the IUCN Commission on Ecosystem Management and WWF-UK, elaborated a set of '10 principles for ecosystem management' (MALTBY et al. 1999).

These principles were a key input to a workshop convened by the Secretariat of the Convention and the governments of the Netherlands and Malawi in Lilongwe/Malawi in 1998. The findings of this workshop were central to all further discussions of the Ecosystem Approach under the CBD. Among the results was a description of the Ecosystem Approach with 12 principles for its application, the so called 'Malawi-Principles' (UNEP/CBD/COP/4/Inf.9).

A few examples of other workshops which helped to clarify and to promote the concept are given in box 3.

The Conference of the Parties at its fourth meeting in 1998 took note of the results of the Malawi-Workshop and requested SBSTTA to develop principles and other guidance on the Ecosystem Approach (Decision IV/1B). SBSTTA-5 submitted recommendation V/10 which was adopted by COP-5 in 2000 with minor changes as the annex to Decision V/6 (see background documents). Decision V/6 thus contains:

- a description of the Ecosystem Approach,
- 12 principles of the Ecosystem Approach,
- 5 points of Operational Guidance for the application of the Ecosystem Approach.

In addition, the COP recommended the application of the principles as reflecting the present level of common understanding. It also encouraged further conceptual elaboration and practical verification.

Box 3

1998	Global Biodiversity Forum 10: Workshop on an Ecosystem Approach to the Management of Inland Waters (http://www.wri.org/biodiv/gbf/gbf10h2o.htm)
1998	Workshop on the Ecosystem Approach to the Management and Protection of the North Sea (Oslo/Norway) (http://odin.dep.no/md/html/conf/workshop/1998/report.html)
1998	Workshop on the Ecosystem Approach of the CBD - what does it mean for European ecosystems? (Isle of Vilm /Germany) (http://www.bfn.de/09/ecoapproach.pdf)
1999	Norway/UN Conference on the Ecosystem Approach for the Sustainable Use of Biological Diversity (Trondheim/Norway) (http://ces.iisc.ernet.in/hpg/cesmg/susfor/Trond.html)
1999	CBD Liaison Group meeting at Paris (UNEP/CBD/SBSTTA/5/11)

Further Elaboration of the Concept

Although an agreement on the description and general outline of the Ecosystem Approach was reached at COP-5, many Parties felt a need for gaining experience in its practical application and - if necessary - adaptation of the concept. The need for case-studies and regional workshops was also expressed.

Three regional workshops were held in Southern Africa, South America and Southeast Asia in the year 2000[3] (for results of these so called 'Pathfinder Workshops' see background documents). One of the main objectives of the workshops was to discuss and analyse case studies in order to draw lessons from existing experience in applying the Ecosystem Approach.

In the sense of the latest decision on the Ecosystem Approach (Decision VI/12, see background documents), which requested the Executive Secretary *inter alia* „...to develop proposals for the refinement of the principles and operational guidance of the Ecosystem Approach on the basis of case-studies and lessons learned ...“ the present workshop at Vilm Island aims at contributing to the further elaboration of the concept.

4 Summary

In the course of discussions under the CBD, the meaning of the term ‘Ecosystem Approach’ has undergone a significant expansion and conceptual specification. Although a certain level of agreement has already been reached, the concept and guidance for the application of the Ecosystem Approach are still evolving.

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[3] The workshops were hosted and/or supported by: the Governments of Zimbabwe, Colombia, Malaysia, and the United Kingdom, the European Community, UNESCO-MAB, the Swiss Agency for Development and Cooperation, WWF-International and the Bureau of the Convention on Wetlands. Royal Holloway, University of London and Royal Holloway Institute for Environmental research (RHIER).

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The International Debate on the Ecosystem Approach: Diffusion of a Codification Effort[4]

VOLKMAR HARTJE

Introduction

The Ecosystem Approach of the Convention on Biological Diversity (CBD) is an effort to codify basic elements of holistic natural resources management with special emphasis on biodiversity. In 1995 during the CBD's second Conference of Parties (COP), the Ecosystem Approach was introduced as a general principle for the first time and in 2000, the CBD's fifth COP specified the approach by adopting twelve principles and five operational guidelines in order to clarify the conceptual basis of the Ecosystem Approach and to provide a guide for implementation. In line with the overall objectives of the CBD, the Ecosystem Approach demands an integrated strategy for the management of land, water and living resources that promotes conservation and sustainable use in an equitable way.

The subject of this presentation is to summarise the international debate that has taken place as a consequence of these decisions in order to draw - in face of the short period of experience - preliminary conclusions regarding the suitability of the Ecosystem Approach and its potential to foster an international spread of ecosystem management strategies. To structure the debate, the Ecosystem Approach is considered as a policy innovation whose potential to have an impact on natural resources management will depend on its international diffusion. Whether countries will be prepared to implement management approaches that are in line with the principles and guidelines of the Ecosystem Approach will depend on three important prerequisites:

1. Effective diffusion of the concept depends on the quality of the Ecosystem Approach in terms of its theoretical justification, its internal consistency, its ability to guide and its general connection to the existing natural resource management approaches currently pursued in most CBD member countries. Whether these qualities are achieved by the principles and guidelines is being debated internationally on a conceptual level by scientists and policy analysts and tested empirically in frontrunner countries that might serve as policy models (for best practice).
2. International diffusion of such a demanding concept requires flexibility in the international system beyond the organs of the CBD in the form of international organisations and networks that might serve as adaptors and facilitators for implementation. They have performed this role in the past with other innovative concepts in environmental and development policy. One has to understand the functioning of these institutions to be able to answer the question whether they will act as adaptors and facilitators or whether they will promote other competing or complementary approaches.
3. Implementation "on the ground" will take place on the national and the sub-national level. The degree to which the concept of the Ecosystem Approach is adopted by the member countries will depend on national and sub-national institutional, social and economic capacities as well as political support.

[4] Based on the results of the R&D project: „Anwendung des ökosystemaren Ansatzes der Biodiversitätskonvention" („Applying the ecosystem approach of the CBD") supported by the German Federal Agency for Nature Conservation (BfN) with funds of the German Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

A summary of the international conceptual debate and a survey of the adoption of the Ecosystem Approach among international actors (e.g. UN agencies and international development funding organisations) is presented.

Critical Reviews of the Ecosystem Approach

Along with the general consensus and efforts to implement the Ecosystem Approach have come some questions of its feasibility and criticism from those who find it too vague and undetermined. The central areas of the debate are:

- Divergent priorities or unclear balance among CBD objectives
- Definition of ecosystems: abstract organising concept or specific space
- Different emphasis of ecosystems services vs. species and habitats

More specifically the recognition of the importance of uncertainty in integrative ecosystem management is confronted with great uncertainty about even fundamental ecological questions (CORTNER/MOOTE 1999). The preparedness in science for the paradigm shift involved in the implementation of the Ecosystem Approach is rather limited. Generally, though numerous case studies illustrate the importance of science as a driving force for the implementation of the Ecosystem Approach, there is no general consensus on how research projects should be carried out in order to provide an adequate knowledge base for management. We currently experience both a lack of deeper scientific knowledge and true integrated approaches in ecosystem science, as well as an enormous growth of scientific activities that have resulted in numerous data sets and publications. Adaptive management has been proposed to deal with the uncertainties surrounding the complexities of ecosystem management and social processes. However, the why and how people and organisations should undertake adaptive management in the existing rigid decision-structures remains unclear. A deeper examination of the literature and the case studies shows that very little of the documents available present truly successful examples.

Furthermore, the scientific knowledge on the valuation of ecosystem services is not fully developed. Generally, existing empirical literature fails to apply economic valuation to the full range of ecosystem services and the benefits of biodiversity preservation (NUNES/VAN DEN BERGH 2001, OECD 2001). Finally, many of the obvious restrictions for the implementation of the Ecosystem Approach can be traced back to the fact that necessary institutional provisions are not in place. The Ecosystem Approach clearly needs a multi-level perspective and sufficiently flexible institutions to tackle the inherent "centralisation/ decentralisation dilemma" in ecosystem management.

Summarising, there is no general agreement visible on what the concept means exactly in terms of management approaches and management outcomes, but there is after all agreement in general terms: It is clear that the Ecosystem Approach involves a paradigm shift.

International Actors as Potential Adaptors: Agencies of the United Nations

The adoption of the ESM as a guiding principle has progressed the furthest among those UN agencies closest to the Convention and its process: UNEP and UNDP as implementing agencies of the GEF adhere in principle to the biodiversity related Operational Programs and will probably be applied on a project level for the OP 12 Integrated Ecosystem Management. This adoption is basically the result of COP deci-

sions. UNESCO's role in the MAB program as a prototype for the ESM precedes the introduction of Ecosystem Approach in the CBD process in the 1990s.

Additionally, UNDP, FAO and UNESCO are involved in biodiversity related activities that are sector or ecosystem specific. UNDP and UNESCO are involved in conceptual work, capacity development, networking in the water sector: UNDP with an emphasis on water governance and UNESCO as a lead agency of the World Water Assessment Program. As a tri-sectoral organisation, FAO has different approaches to ESM according to its sectoral divisions. Whereas the importance of agricultural ecosystems for the productivity of agriculture and for wider ecosystem services is a central focus in the agricultural division, with a clear dominance on those aspects that are central to the productivity dimensions (genetic resources, pollination, pest management). The fisheries division moved towards a full adoption of ESM by calling for an "ecosystem-based fisheries management" and co-organised the Reykjavik conference where the principle was widely endorsed. Here, the concept has progressed considerably as questions of scale, objectives, decision-making, management measures and flexibility of management are addressed more specifically.

International Actors as Potential Adaptors: International Funding Agencies

The size and quality of the biodiversity budget varies considerably among the nine agencies and programmes covered. Because of its mandate, the GEF has the largest biodiversity budget of all agencies, with biodiversity ranking as the top theme in that it accounts for more than 40% of GEF spending. The funding is based on grants, making this funding source attractive for the recipient countries, but it covers only the incremental costs of global benefits: it requires additional funding for the local costs. The World Bank has a sizeable portfolio for local costs, but they are not all grants. The other multilateral programs are smaller for the regional development agencies, but here the loan components are higher (ADB, IADB). Only the EC programs consist fully of grants. The bilateral agencies increased their commitments in the 1990s with the German program reaching the relative and absolute top figures among the four programs.

The adoption of the Ecosystem Approach is highest or more pronounced among the multilateral agencies, the GEF, the World Bank, the European Community and among the bilateral agencies, whereas only US AID is fully committed. The GEF position is basically the result of a COP decision on *Further Guidance to the financial mechanism* (GEF 2002): within the World Bank, the Environment Department tried to establish ESM as a guiding principle in the 1990s, but only with the new Environmental Strategy did the concept become official policy (WORLD BANK 2001). The European Community used its own commitment as a party to the convention to develop a Biodiversity Strategy and included its development cooperation program. The inclusion of the Ecosystem Approach is to a large extent the result of a conceptual biodiversity project which was operated by IUCN. The development in the United States looks similar: a long running conceptual project provided the input for the adoption of the Ecosystem Approach; this time the project has been implemented by Washington-based environmental NGOs, WWF, Nature Conservancy and WRI. In terms of the regional development banks, the development of biodiversity conceptual papers did not progress towards an integrated solution beyond the support for national strategies of their client countries.

The situation in the United Kingdom is completely different, however: here, the development agency and a number of UK research and consulting organisations are committed to the sustainable livelihood approach with a poverty focus. The sustainable use of biodiversity is subordinated to the poverty reduction objective and biodiversity is seen as one of a number of resources used by the poor (CHAMBERS/CONWAY 1991). The redirection of a number of development co-operation programs towards the reduction of poverty increases the importance of the environment-poverty link.

Within the funding agencies, the perception of the Ecosystem Approach is limited, mostly to those units of the organisations involved in supporting habitat protection. It has broadened recently by the debates about the sectoral policies in water management, forestry and irrigation. It entered into policy documents of the funding agencies in co-operation with global environmental research/lobbying organisations (EC/DFID/IUCN 2001, ROSEN 2000) as part of a communication strategy with the stakeholders of the funding agencies. The environmental units of the agencies are involved in conceptual work of applying the concept to habitat conservation, most prominently at the World Bank (GRIMBLE 1996, HASSAN/DREGNE 1997, PUTZ et al. 2000, WORLD BANK 1998).

There is little evidence that the next steps of integrating the Ecosystem Approach into the existing set of operational policies have advanced considerably. There is a broad debate on the various approaches of integrating habitat protection and the experience resulting from the co-operation efforts of the past. Their relationship needs further elaboration. These changes at the conceptual and policy level still have to be translated to the operations of the agencies on a project and program lending level. At the World Bank, as within other lending agencies, this change will be cumbersome, as the previous reviews of the Bank in terms of integrating environmental objectives have shown (OED 2001, LELE 2000). The only existing portfolio reviews undertaken by the Environment Department of the World Bank do not cover the role the Ecosystem Approach already plays on the project level. The available material does not allow a second assessment regarding this question.

Ecosystem Specific Developments

There have been various efforts to implement holistic approaches into the management of specific ecosystems. Most advanced is the implementation in the realm of marine ecosystems and forest ecosystems. For marine ecosystems, various regional agreements have produced transboundary management concepts and programs, however, focused mainly on the protection of species and their habitat. The far more ambitious project of the implementation of an ecosystem approach for the management of the North Sea is still in its infancy, yet an evaluation was not feasible. In the forest sector, an intensive international dialogue in the frame of UN negotiations and results from scientific efforts produced substantial progress concerning sustainable forest management approaches, however inter-sectoral co-operation with trade-related institutions needs to be intensified to link regional advances in sustainable forestry with economical incentives on the national and global scale.

On the whole, there is no consistent picture concerning the implementation of Ecosystem Approach like strategies in specific ecosystems. Some sectors like forestry gained increased attention and produced substantial progress due to their relevance for combating global climate change, while other sectors with promising approaches such as ICZM and IRBM only show slow advances due the complexity of institutional and management issues.

Obstacles and Challenges

The international debate on the Ecosystem Approach shows considerable diffusion of a concept that originated within the context of a specific international environmental agreement. The approach of this paper has been to view the debate as an international diffusion on a codification effort of a holistic concept of environmental management. This has been fruitful as the following results can be summarised. They point to challenges in the need for a clarification of the codification of the Ecosystem Approach and in the needs of demonstrating the usefulness of the guidance it is supposed to provide:

- The concept of the Ecosystem Approach of the CBD is the centre of a **critical debate** concerning its **theoretical foundation**, its **logical consistency** and its **value as a practical guide**.
- It is a demanding approach in terms of **complexity** and **co-ordination requirements** - the claims towards a paradigm shift make the adoption difficult. At the same time, there is not only in science a need for an integrative approach with an open decision-making process with a long term perspective.
- Internationally, there are a number of **early adopters** (World Bank, EC, US AID, UNEP, WRI) of the ESM, but with a slight degree of conceptual and definitorial variation.
- But there are **competing approaches** as well (sustainable livelihood) guiding international actors and there is an **open relationship to the concept of sustainable development**.
- The concept lacks guidance for the **balancing between conservation and sustainable use**, particularly in view of the renewed emphasis of poverty reduction.
- There are applications of the ESM on an **ecosystem-specific level** that have progressed further in their conceptual basis and are more specific (FAO fisheries: Ecosystem-based fisheries management; North Sea Conference: Ecosystem Approach to the management, protection and restoration of the North Sea).
- There seems to be **progress towards integration among the international actors**, but it can only be identified on a conceptual level, i.e. on paper, but not yet on the programmatic or project level.
- Within these international actors, the change towards integration comes from the conservation side to integrate sustainable use, although selectively, from the user side - forestry and fisheries and sometimes water management - to the conservation side.

For further readings on the above refer to: VOLKMAR HARTJE, AXEL KLAPHAKE & RAINER SCHLIEP (in print): The International Debate on the Ecosystem Approach: Critical review - International Actors - Obstacles and Challenges - BfN-Skripten. Federal Agency for Nature Conservation, Bonn.

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On the Different Perceptions of the Ecosystem Concept within the Ecosystem Approach: Problems and Potentials

KURT JAX

My experiences with the Ecosystem Approach relate mostly to theoretical and historical studies which I have carried out during the last years. A forthcoming project (starting in 2003) will build on the results of these studies. The theoretical study consisted in an in-depth analysis of the concepts related to ecological units, in particular community and ecosystem, and their application in conservation issues. As to the latter my focus has been on the application of the ecosystem concept in ecosystem management strategies.

The analysis revealed amongst others several characteristics of the Ecosystem Approach and of current ecosystem management strategies, on which the approach basically draws upon, which are rarely made explicit and which cause problems in the application of these approaches:

- The ecosystem concept is used in various meanings and is thus strongly ambiguous.
- The ecosystem is used both as a concrete object (unit) and as a perspective (denoting a "holistic" approaches transcending disciplinary and administrative boundaries).
- Different value dimensions are attributed to the ecosystem.

Although these characteristics cause problems (e.g. unclear goal systems and a unreflected mix between facts and values) they can be made productive in the context of the EA if considered explicitly.

To improve the Ecosystem Approach these issues should be made explicit. In consequence there is need to give guidance to a more explicit formulation of and communication about the goal systems of ecosystem management, i.e. the specific definition of the ecosystem involved. The ambiguity of the ecosystem concept (already given within the realm of scientific ecology) can be made useful when it is acknowledged that the ecosystem (as a concrete object) is not simply something that can be found "out there" in nature, but that it is *also* a socially determined object, differing according to the perceptions and interests of the different observers and/or stakeholders. This would be an extension of principle 1 of the Malawi principles about the objectives of (ecosystem) management. Also guidance should be given for dealing more clearly with the relation of facts and values in ecosystem management. Both must first be distinguished analytically and discussed at their specific levels without mixing them, *in order* to integrate them again.

In a forthcoming project about the application of the Ecosystem Approach for the economic and ethical evaluation of biodiversity on the Chilean island of Navarino (Cape Horn region) we are using the ecosystem concept and ecological theory in general not only to provide scientific information and develop predictions but even more as a heuristic tool for communication and as the backbone for interdisciplinary work and public participation. For this purpose we will use a conceptual model for the definition of ecological units as developed by JAX et al. 1998[5].

[5] JAX, K., JONES, C.G. & PICKETT, S.T.A. (1998). The self-identity of ecological units. - Oikos **82**: 253-264.

The Role of Integrated Natural Resource Management towards Poverty Alleviation, Food Security, and Environmental Protection

JOHN POULSEN

This paper describes the concept of Integrated Natural Resources Management (INRM), as developed by the Consultative Group on International Agricultural Research. It will become evident that INRM resembles the Ecosystem Approach of the CBD in both content and modus operandi, and several elements are useful for the deliberations and clarification of the Ecosystem Approach.

The 1998 CGIAR System Review included criticism of the Green Revolution for having failed to adequately address environmental and social issues associated with the introduction of new crops. The System Review strongly advocated an Integrated Natural Resource Management approach for the CGIAR. Other important actors are stressing the need for INRM, for instance according to the World Bank, 8-12% of global GDP is lost due to bad land management. Cyrus Vance has stated that natural resources losses will be the main cause of conflict over the next 50 years.

In response to this the Center Directors Committee established a task force that has met on several occasions (Bilderberg, Holland in 1999; Penang, Malaysia in 2000; Cali, Colombia in 2001; Aleppo, Syria in 2002). These meetings focussed on learning the lessons of the eco-regional approaches and INRM in recent decades.

INRM Defined

The task force has adopted the following definition of INRM:

- *Integrated natural resources management (INRM) is an approach to solving problems (and seizing opportunities) in the way people use natural resources in agroecosystems. These include forestry and fisheries as well as agriculture. INRM uses action-oriented research, in partnerships, in specific locations, focused on stakeholder priorities, to deliver benefits at multiple scales. Its objectives are to help improve livelihoods, system resilience, productivity and environmental services in ways that benefit large numbers of people across large areas. Success in this approach is measured by changes in social, physical, human, natural and financial capital.*
- *Its effectiveness in dealing with such problems comes from its ability to:*
  - empower relevant stakeholders
  - resolve conflicts of interest among stakeholders
  - foster adaptive management capacity
  - accommodate complexity by focusing on key causal elements
  - integrate levels of analysis
  - merge disciplinary perspectives
  - guide research on component technologies
  - generate policy, technological and institutional options for stakeholders.

The challenge is to demonstrate measurable benefits from INRM research to large numbers of people within reasonable timeframes.

Improved INRM and genetic improvement have been portrayed as the two pillars of the CGIAR - this is an artificial distinction and it is essential that the two areas of work are organised to complement one another. They should be mutually interdependent.

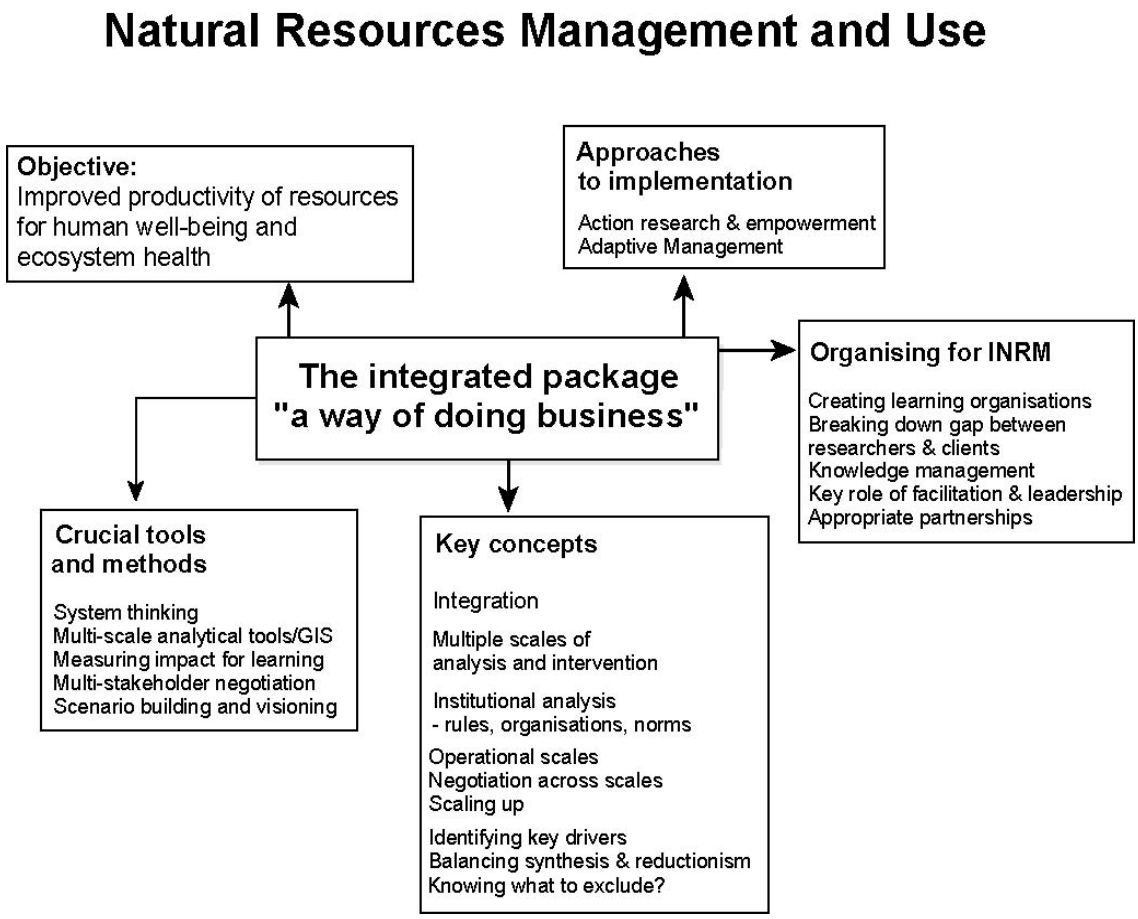
INRM is used to allow research to moving along the R&D continuum: all management should be experimental; indicators provide an adaptation and a negotiation framework.

Some Challenges:

- Scale issues present a significant challenge: for instance one must deal with Communities, Landscapes, Watersheds, Ecosystems, Ecoregions, and Global scales in an integrated manner.
- Choices have to be made on what to integrate and where to draw the limits around a natural resource system.
- The UNCED processes is generating demand for INRM approaches.
- Bridging the gap between communities and global environmental concerns is a special challenge.
- Climate Change: At present there is a weak basis for integrating across scales; there is potential for a global challenge program
- Biodiversity: Local and global benefits often in conflict
- Knowledge Management: We have not been good at learning lessons, Mistakes are repeated, rate of adoption of best practice slow
- Tacit knowledge is as important as explicit knowledge
- Social learning is more important than teaching
- Social Organisation: Social Capital is more important than Financial Capital
- Negotiations and Trade-offs are more common that win-wins
- Build Constituencies: Political, Civil Society, Local People
- Process is everything and it takes time
- Adaptive capacity is more important than plans
- We must end scientific arrogance: Humility and respect vis a vis local resource managers beats charismatic leadership
- In projects accountability may be the enemy of flexibility
- Aid agencies are hopeless at INRM. They must manage by outcomes and stick with areas and problems for as long as it takes - they must practice adaptive management..
- The word ‘project’ carries overtones of ownership. Scientists intervene and are not disinterested.
- Be clear on what defines success. Define performance indicators.
- Institutional arrangements: Tenure, Laws, Regulatory capacity, Civil society are very important and are researchable.
- Democratisation of Science: Citizen’s Science - these trends are favourable to INRM.
- Common Property Resource Management: Clear Boundaries and Rights, Locally Adapted Rules, Participatory Rule Making, Accountable Monitoring, Sanctions, Enforceable, Graduated, Local Conflict Resolution Capacity, Government Recognition of Local NGOs, Effective Devolution (Subsidiarity) are all important concepts for INRM.
- Don’t rush it - INRM takes a long time

INRM emphasises that ecosystems are moving targets with multiple potential futures that are uncertain and unpredictable. Therefore, management has to be flexible, adaptive and experimental (HOLLING/ MEFFE 1996).

Fig 1: Key elements of INRM

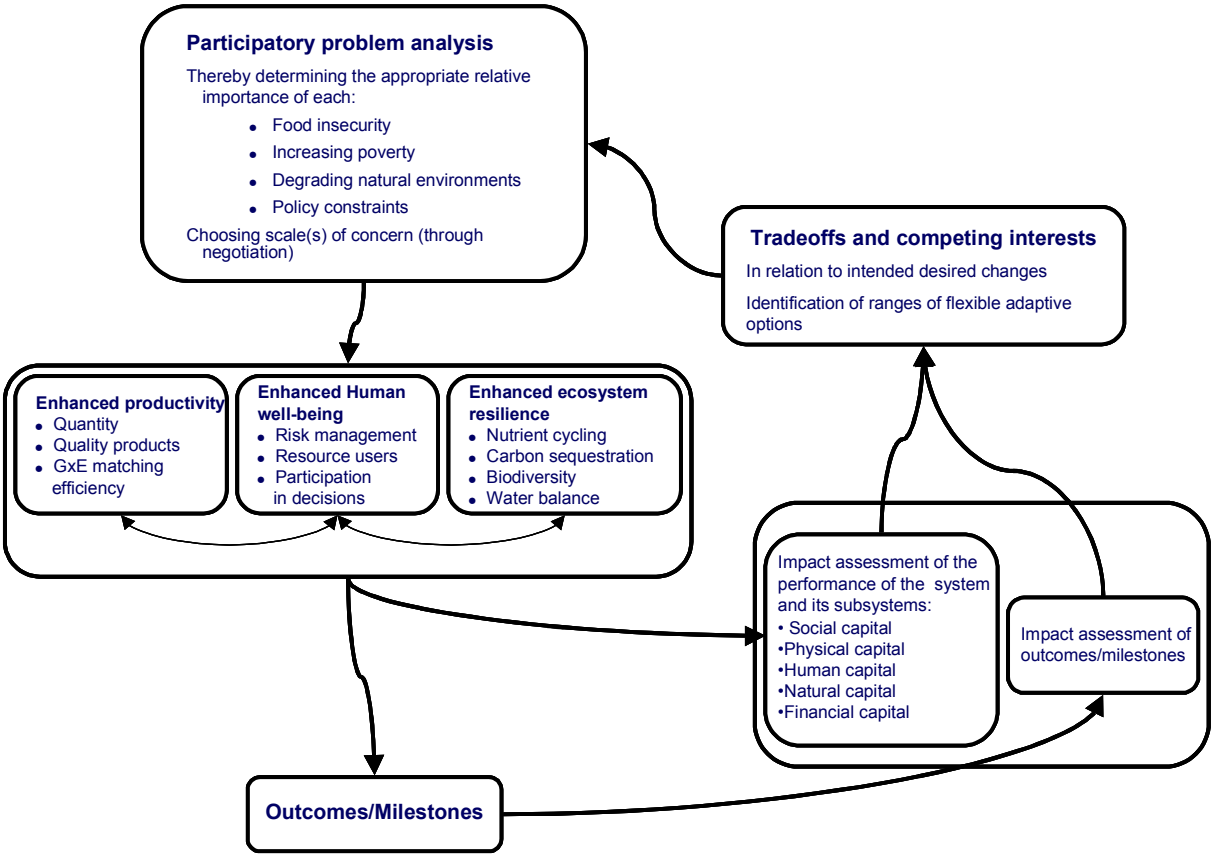


An ecosystem approach to management will therefore emphasise that

- different scales need to be considered and that one needs to look beyond boundaries of the system in question,
- all goods and services must be balanced,
- all relevant stakeholders need to be included in negotiations,
- solutions must be adapted to achieve desired outputsFigure 2 shows the framework around which

INRM is done, emphasising the role of dynamic and iterative impact assessment to ensure that goals and objectives are continuously reassessed against changing needs and state of the system.

Fig. 2: Framework for INRM



INRM allows us to develop effective and relevant solutions under real life operational conditions, to facilitate better decision making and to manage complex technical changes with multiple impacts. We also need it to be able to maintain a range of options and resilience, to reconcile conflicting objectives and to facilitate or improve access to resources and benefit sharing. Finally, we need it as a means of examining resource degradation over time.

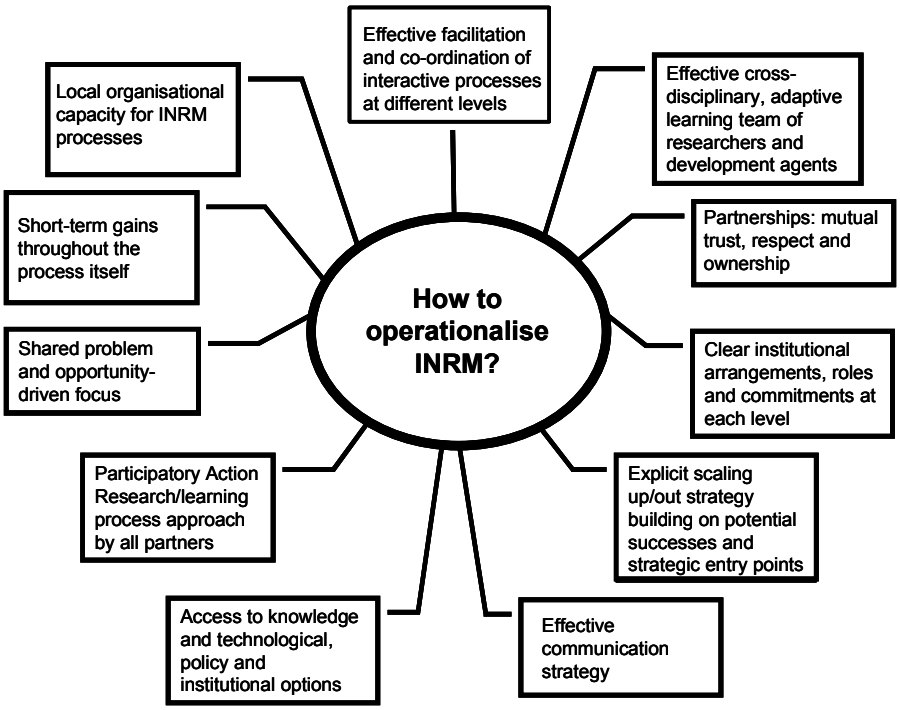
INRM can be used to analyse higher systems-level dynamics, stresses and interactions and to link global and local processes such as biodiversity loss and climate change. In addition, it can be utilised to evaluate future system scenarios and promote adaptation and learning.

Integrated approaches need not integrate everything and be all-embracing—the problem drives the integration. We need to integrate only those additional components, stakeholders or scales that are essential to solving the problem at hand.

Adaptive Management, Resilience, Sustainability

Change is inevitable, therefore adaptive capacity is essential (e.g. the development of tools and models to assist people and institutions to make management decisions and the adjustments necessary to achieve desired INRM goals). To this end, the learning paradigm should include a flexible combination of concepts and methodologies, participatory learning and action and social capital development, hard science and common sense.

Fig. 3: Framework to operationalise INRM in practice



To ensure the resilience and long-term health of an ecosystem, its stocks of key resources (water, biodiversity, etc.) must be carefully, and integrally, managed. Building the resilience of agro-ecosystems requires increasing the adaptive capacity of the structures and processes (ecological, social, economic) that maintain that system.

Adaptive capacity and resilience are key to sustainability. But we need to go beyond the Two-Pillar Approach and address genetic diversity in INRM. Biological diversity is critical not only to the adaptive capacity and sustainability of ecosystems but also to human wellbeing.

Sustainable Livelihoods

Sound INRM is integral to sustainable livelihoods, and natural capital is one of the foundations of this approach. From a livelihoods perspective, integrated resource management is crucial because it analyses the interactions between different kinds of resources, different fields of knowledge, and different types of stakeholders.

Knowledge Management

Knowledge is mostly in people's heads—people, not computers, are the chief knowledge repositories. It is important to keep in mind that knowledge and learning are socially constructed. We need to focus on how knowledge moves around (the flow, rather than the stock), and on connecting people in innovative ways (e.g. INRM communities of practice).

Organisational Principles

Several lessons can be learnt on how to organise multi-institutional INRM activities. Integration requires both an effective division of labour and the bases for collaboration. The question is how we govern multi-

institutional activities to ensure that they are effectively managed, inclusive, transparent and productive. Other issues to be addressed include the division of labour, collaborative advantage, and knowledge management - how do we organise for mutual learning and to manage knowledge effectively?

INRM is increasingly applied as the framework around which several global challenges are approached:

- Climate Change
- World Water Crisis
- Conservation and Use of the World's Genetic Resources
- Stopping Desertification
- Restoration of Degraded Lands
- Sustainable Forest Management
- Sustainable Fisheries Management
- Conceptualising these global challenges within an INRM framework with common sets of approaches, methodologies and organisational principles allows for cumulative learning

Operationalising the Ecosystem Approach: Lessons from Forest Management for Sustainable Livelihoods (16th GBF: Workshop on "Managing Forest Ecosystems for Sustainable Livelihoods")

PRESENTED BY PIET WIT

Participants in this workshop addressed two objectives:

- To assess the efficacy of the 12 Principles of the Ecosystem Approach to assess cases of community/local management. Cases were presented on management of boreal forests in eastern Russia, tropical rainforests in Cameroon, mangroves in Central America and Bangladesh, mountain and tropical forests in South Asia.
- To develop guidance for the operationalisation of the 12 Principles at the national and local levels.

A keynote by Gill Shepherd provided an analysis of the 12 Ecosystem Approach Principles; Rik Leemans described the Millennium Ecosystem Assessment and the relation the Assessment has to the Ecosystem Approach Principles. Case studies were provided on: Mangroves (by Ana Laura Lara-Dominguez and Mahfuz Ullah), Mountain Forests (Mohammed Yusuf Kahn), Boreal Forests (Nikolay Shmatkov and Taisia Solodikova), Tropical Rainforest (Isaac Njifakue) and South Asia Tropical Forests (Ashish Kothari). Izabella Koziell, Bob Fisher and Pita Verweij provided complementary papers on livelihoods, equity, and innovative financing mechanisms related to management of forest ecosystems.

The case studies catalysed discussions resulting in identifying several lessons and recommendations. Because the cases focused on issues related to sustaining livelihoods, the recommendations tend to emphasise social dimensions of forest management. The analyses of the cases will be presented with the published proceedings.

Key lessons from the case studies are:

1. **There is no single prescription for applying the principles of the Ecosystem Approach**. Because of the high variability in the local conditions in different countries in which the management was taking place, it is clear that the procedures adopted to apply the Principles will have to be flexible enough to accommodate the variation in ecological, political, economic and social conditions prevailing in each instance.
2. **In none of the case studies had legal authority been given to the people who were managing the ecosystems**. While it is true that since the World Summit on Sustainable Development in Rio de Janeiro (1992) many governments have "updated" their forest management legislation to acknowledge the need for local people to use and benefit from forests, this principle is rarely considered in wildlife or Protective Area-related legislation. Further, even in the forest sector, there remains a very strong command and control mindset amongst the responsible government ministries and hence there are very few cases where authority has been formally granted to local people to manage and benefit from the use of ecosystems.
3. **The cases illustrated the importance of ensuring congruence in governance between different levels or scales**. It was generally accepted that delegation of authority was an essential element to en-

sure that the managers are accountable for their actions. Nevertheless, to be effective, the governance roles at different levels (e.g., local and government oversight authority) must be congruent.

4. **The management systems documented in the case studies focused on all aspects of the ecosystem**. The local managers tended to adopt a holistic approach to the management of their ecosystems that took into account the different contributions/requirements of local level ecosystem mosaics (e.g., forest, pasture, agricultural lands). The application of local indigenous knowledge and civil society institutions to guide and govern the management system at the local level involved a variety of actors, including local government officials, local leaders and often supporting non-government organisations.

5. The cases underscore the importance of involving the relevant stakeholders in the development and implementation of ecosystem management systems. It was clear from the cases that there was value in engaging primary and secondary stakeholders, whose interests should be accommodated, as far as possible. In particular, consideration should be given to the local stakeholders who are most likely to be disadvantaged by conservation, exploitation, and/or development activities. The active participation of the stakeholders is dependent on their equal access to information as a prerequisite for the active participation.

6. While the 12 Principles of the Ecosystem Approach were an effective framework to analyse the cases, issues related to equity and livelihoods in the cases could not be adequately addressed. The principles do not focus on how ecosystems, and the biodiversity within them, actually contribute to and affect livelihoods. The interpretation of the Principles related to livelihoods tend to focus on economic benefits, while issues related to livelihood security, which is linked more to the resilience of the ecosystem to sustain the production of fundamental goods and services, is not normally considered.

7. **The cases demonstrated that diversification of resource management regimes is not addressed in the Principles per se**. Besides the specific benefits derived from the management and use of a resource, other values, which tend to be overlooked, may be very important to the long-term sustainability of the management regime. For example, the value of biodiversity in providing options and choices (hence livelihood diversification and differentiated use of biological resources), in insuring against risk (through strengthening resilience), providing information (learning new materials and processes) and its uniqueness (culture, self esteem, pride etc.) are values that are generally very important.

Translating the Ecosystem Approach Principles into action

Analysis of the cases, taking into account the seven general lessons noted above led to the endorsement of four broad recommendations to the Parties. In relation to each of the general recommendations concrete guidance is provided.

1. The Parties should establish a legal and institutional capacity/framework to implement the Principles of the Ecosystem Approach.

Specific steps required are:

a. Crafting and adoption of relevant legislation and policies;

b. Development of administrative procedures necessary to authorise the application of the Ecosystem Approach;

c. Establishment of means to inform, assist and advise on the management of ecosystems; and

d. Providing means to monitor and assess ecosystem management activities and the means to ensure that ecosystem managers are accountable for their actions.

It is noted that the governments of Norway and The Philippines have recently promulgated legislation that is designed to implement the Ecosystem Approach. These examples should be made available to other Parties to help advise and assist them to prepare their national legislation.

2. The Parties, with the assistance of the CBD Secretariat, should strive to mainstream the Principles of the Ecosystem Approach.

Specific actions that are called for are:

a. Parties using the Principles as a guide to a "holistic" approach biodiversity management and conservation by incorporating the principles across all ministerial sectors and activities, such as land-use planning, agriculture, fisheries, forestry, etc;

b. Ensuring that the relevant parties to transboundary situations interpret and apply the principles in a consistent and congruent manner;

c. Promotion of the adoption of the Principles of the Ecosystem Approach by other multilateral environmental, trade, and development agreements;

d. Instituting a requirement that bi-lateral development assistance be based on, or take into account, the principles;

e. Ensuring that multilateral funding mechanisms, such as the GEF and EC small grants programmes for tropical forest conservation, apply the principles in their funding decisions;

f. Ensuring that other initiatives undertaken in the context of the CBD, such as the biodiversity business initiative, are guided by and incorporate the principles in their various activities;

g. Innovative Financing Mechanisms (IFM) could provide a mechanism to promote implementation of the Ecosystem Approach; and

h. Donors need to understand that the normal 4-5 year project time cycle is not sufficient to ensure that all aspects of Ecosystem Approach are institutionalised within the recipient country and/or project.

3. The CBD Secretariat with assistance from technical bodies, such as IUCN, should prepare practical instruments to advise and assist the Parties to implement the principles.

Specific practical actions that the workshop recommended are:

a. The design and implementation of a procedure to "ground test" the applicability of the principles in different regions, in relation to different ecosystem management systems, including traditional ecosystem/sustainable use systems, agricultural practices, oil and mineral extractions, etc;

b. The pathfinder workshop series should be continued to provide the means to assist governments interpret and apply the principles of the Ecosystem Approach;

c. Regionally based, interdisciplinary networks of specialists competent to advise and assist governments to implement the Ecosystem Approach should be identified and communicated to the Secretariat and Parties to the CBD;

d. That cases of ecosystem management in other biomes, such as wetlands, mountains, aquatic, marine, be prepared and the relevance of the principles of the Ecosystem Approach be analysed;

e. That the Secretariat disseminate the case study review format adopted for the pathfinder workshops to facilitate preparation and analysis of case studies; and

f. A procedure be provided by the Secretariat to synthesise the lessons relevant to the refining the interpretation of the principles of the Ecosystem Approach and communicating those interpretations to the Parties to assist them in their application of the principles.

4. Parties should consider the following guidance in implementing the Principles of the Ecosystem Approach:

a. The fact that ecosystem management involves planning management of complex systems, which, because of the changing nature of such systems and the variety of changing goals of a variety of actors, cannot rely on a prescriptive plan, but a process of dialogue, negotiation, and adaptation of management procedures;

b. The operationalisation of the Principles must to ensure that issues related to livelihoods and equity (e.g., gender, economic, authority) are taken into account explicitly in policies and procedures;

c. The ethical imperative that costs of conservation must not be imposed on poor locally "dependent" people;

d. That "stakeholders" are defined as those people/institutions whose actions can affect the outcome of a project or activity, or those people/institutions who are affected by a project or activity. The inclusion of "all stakeholders" as called for in the Principles may actually "dis-empower" those who are least able to bear costs. And therefore it is advised that priority in involvement of stakeholders be given to those people who:

   i) are dependent on the ecosystem for their survival,
   ii) live in close proximity to the ecosystem, and
   iii) are willing to invest in the conservation of the ecosystem;

e. Creating long-term community stake in conservation and sustainable use of biological resources, requires enabling / exploring a range of livelihood options linked to these resources, and making available full information, capacity-building, and institutional mechanisms to achieve this options;

f. The role/relevance of middlemen, consumers and other elements of the private sector need to be considered in the application of the Principles of the Ecosystem Approach;

g. Information, communication and education should always be a main component in the application of the principles of the Ecosystem Approach at the local or national levels; the role of customary law

and traditional practices must be incorporated into and recognised in operationalising the Principles; and

h. Procedures adopted at the national level in operationalising the Principles should encourage managers of projects and others undertaking activities in forest ecosystems to consider the effects of their activities on adjacent and other ecosystems and on the ecosystem they are managing over the long-term.

Findings from the International Workshop for Central and Eastern European countries "Tourism in Mountain Areas and the Convention on Biological Diversity" with regard to the Ecosystem Approach

PRESENTED BY CORDULA EPPLE

1. General recommendations:

Problem: Difficulties in understanding the document

- More explanations of the principles in simple language are needed to make the document easier to understand for a broad audience.
- Training for the application of the approach should be provided to specialists.
- Good examples of practical use of the approach should be provided.

Problem: How should the approach be applied?

- It should be ensured by some form of overall requirement that all principles of the Ecosystem Approach are applied in an integrated way - isolating individual principles from the context may even be harmful or lead to misinterpretation.

Problem: Should there be a general agreement on the way of implementation or should the approach only be taken as a recommendation?

- The way of implementation of the principles should be left to the choice and responsibility of the country.
- However, in implementation of the Ecosystem Approach, political boundaries should not play a role (since ecosystems are not limited by them).

Problem: The issue of restoration is not considered

- Some sort of reference should be made not only to the prevention of damage to biodiversity, but also to the restoration of damaged areas (a brief reference to restoration is actually contained in the rationale to principle 5)

Problem: For the application of the Ecosystem Approach to tourism activities, substantial efforts in research and monitoring are needed.

- Technical and scientific assistance has to be provided from the national level to the local level to make research and monitoring possible

2. Recommendations on particular principles:

Principles 1 and 2: The balance between national and local interests is seen as a sensitive issue that must be discussed case by case. However, common priorities should be outlined at the national level.

Concerning **principle 1**, general priorities and aims with regard to particular activities should be defined on all levels from national to local level in order to provide guidance.

The issue of sharing responsibility, as expressed in **principle 2 and point 4 of the operational guidance**, should be seen in context with the issue of benefit-sharing as expressed in **point 2 of the operational guidance**; the government (both national and local) should define strategies with regard to sharing of responsibility and profit sharing.

Principle 4c is considered very important; a way should be found to include long-term and unexpected (potential) costs as well.

Principle 6: When defining the limits of ecosystem functioning with regard to tourism, both ecological and social carrying capacity should be taken into account; inclusion of an explicit reference to carrying capacity as a tool for application of the principle should be considered.

Principle 8 is considered important but difficult to apply because of general tendencies in politics towards short-term decisions and also because of the highly dynamic nature of the tourism business.

Implementation of the Ecosystem Approach: Case Studies and Lessons Learnt

Consideration of the Ecosystem Approach of the Convention on Biological Diversity in Germany: General Framework for Implementation and Lessons Learnt[1]

AXEL KLAPHAKE

In Germany's nature protection policy, the traditional approach is strongly orientated towards protection areas and the conservation of threatened species and biotopes rather than a holistic management of ecosystems. However, in recent years the situation has somewhat changed and there are some encouraging developments that favour implementation of ecosystem-orientated management approaches, even if the term 'ecosystem approach' is rarely used as a label. For example, the growing importance of decentralisation, integration of stakeholders, coalitions with land owners, and, generally, the need to consider the socio-economic prerequisites and consequences of nature protection policy are increasingly being acknowledged. In addition, there are some sector policies which experience a certain shift towards the consideration of biodiversity aspects on the level of policy objectives and instruments. For example, several states (*Länder*) have implemented Programs for Forest Conversion with the objective of enhancing species-richness. Further, the need to develop and implement holistic management approaches at the regional or landscape scale has been intensively discussed in science and, currently, there is some evidence for a promotion of respective approaches in practice, e.g. at several watercourses or landscapes. However, organisation of science in such a manner that the results are transferable into practice is a matter of concern. Many experts stress the broad gap between scientific advances and knowledge on the one hand, and information needs in planning practice and the capacity of actors to absorb new scientific knowledge on the other.

In some respects, the European Union can be perceived as a driving force towards improved comprehensive policy concepts in ecosystem protection. Much European legislation has not only tightened environmental standards but has generally had a more positive impact in that the EU approach relies more on coordination and consultation of relevant public and private actors participation. Therefore, and despite some ambivalent results, the growing influence of the European Union corresponds well with a general reorientation from top-down to bottom-up approaches and enhanced integration of environmental aspects into sector policies. Shifts in EU sector policies (e.g., agriculture and regional policy) and several attempts to integrate environmental concerns in the various policy sectors potentially raise pressure on the member states to more effectively integrate environmental and biodiversity aspects in their policies. Equally, the EU actively encourages integrated management approaches concerning particular ecosystems. For example, the EU's 2000 Water Framework Directive requires a basin-wide integrated management approach which substantially differs from traditional water policy in Germany. Another example is integrated coastal zone management, which is promoted by the European Commission via pilot measures and financial support.

[1] Based on the results of the R&D project: „Anwendung des ökosystemaren Ansatzes der Biodiversitätskonvention" („Applying the ecosystem approach of the CBD") supported by the German Federal Agency for Nature Conservation (BfN) with funds of the German Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

Therefore, there are some interesting trends towards management approaches that come close to the concept of the Ecosystem Approach of the CBD. However, it is somewhat difficult to identify a clear trend. In fact, the overall picture might be characterised as a patchwork with various and partly contradictory developments in different policy areas, on different decision levels and in different regions of the country. In general, an effective integration of biodiversity aspects in all sector policies has not been achieved. Important constraints are the institutional complexity of environmental and spatial planning, the still dominating influence of particular sector policies and, despite the developments mentioned, the traditional approaches pursued in nature protection policy.

A more substantial illustration of problems to implement the Ecosystem Approach 'on the ground' shall be provided by a comparative analysis of case studies. In a research project that was carried on behalf of the German Federal Agency for Nature Conservation ecosystem management approaches in five German regions (German Wadden Sea, Diepholz Peat Lowlands, Elbe Riverscape, Bavarian Forest, German Alps) and in the forest sector were analysed. A detailed presentation of the results cannot be provided in this short presentation. However, with respect to the consideration and implementation of the twelve principles and five operational guidelines of the Ecosystem Approach there are two different trends. Besides the general difficulty to assess the various aspects of the consideration and implementation of the Ecosystem Approach ex-post on the **level of the plans and programs**, the principles and guidelines of the Ecosystem Approach are to a large extent considered for ecosystem management. However, this general result can also be traced back to the fact that the wording of the 12 principles and 5 operational guidelines is held so general that it permits a host of different interpretations. In fact, plans and programs of very different management approaches are in conformance with the Ecosystem Approach of the CBD in general terms but its general wording rarely allows to assess specific programs with regard to their contribution to biodiversity protection. On the other hand and with respect to the **implementation**, there is no such clear trend, a fact which is reflecting the variety of case studies considered. While there is a general and encouraging trend to better reflect the different objectives referenced in the Ecosystem Approach in concrete management decisions, the case studies also have demonstrated that it is not an easy task to integrate all ecological, economic and social objectives in the management of specific areas. As a general rule, the more concrete the management decisions and the delineation of the respective areas are, the more likely are tensions between different objectives and, as a result, the lower appears the degree of integration.

Concerning the consideration of Ecosystem Approach principles and guidelines, most advances were achieved with regard to the consideration of the societal choice issue emphasised in principle 1 of the Ecosystem Approach. This is due to the self-conception of the approaches considered here as to realise integrated approaches to ecosystem management by raising the claim to integrate social, ecological and economic aspects. The majority of case studies is located in protected areas, thus the conservation of ecosystem structure and functioning is a priority target of the respective ecosystem management (principle 5, guideline 1). It seems clear to ecosystem managers in Germany that ecosystems must be managed within the limits of their functioning (principle 6) and that the formulation of agreed targets for ecosystem management demand a long-term perspective (principle 8).

Weaknesses on the level of plans and programs exist concerning the consideration of external effects on adjacent and other ecosystems due to and combined with the lack of coherent nation-wide and regional monitoring concepts respectively (principle 3). Another clear trend is the neglected role of economic in-

centives and benefit sharing in ecosystem management (principle 4). Economic expertise is not a characteristic of German ecosystem management, albeit the consideration of principle 4 demands strong and coordinated political support for a multi-level approach.

On the level of the implementation of the objectives laid down in the plans and programs of the case studies, the picture is far less clear. As illustrated by the selected case studies, the reality of ecosystem management in Germany is characterised by a mixture of parallel and complementing approaches. There is a continuum of management paradigms reaching from approaches driven by more traditional sector concepts like in the management of the national parks, up to approaches that promote innovative and integrated management objectives with an graduated spatial concept and equally considering social, economical, and ecological indicators. The latter approach is represented by the biosphere reserve concept of the MAB program, the concepts for integrated coastal zone or river basin management. Management systems might be established by bottom-up approaches like the one at the Diepholz peat lowlands or they might be induced by transboundary top-down approaches like in the case of the Alpine Convention. Thus, the heterogeneity of results concerning the implementation of Ecosystem Approach principles and guidelines into practice is a reflection of this variety of approaches and the different stages of their implementation. Furthermore, our case studies have demonstrated that management approaches often are science-driven and late recognition of stakeholders has led to opposition. In many cases, active participation of stakeholders in the implementation of ecosystem management was encouraged not until political conflicts and sometimes a irreconcilable divergence of interests already had appeared.

In addition to this rough assessment of the consideration of the Ecosystem Approach in Germany, some more general suggestions for the further development and refinement of the Ecosystem Approach can be summarised:

- The wording of the Ecosystem Approach is too general to serve as a directive for action on an operational level.
- This general wording also reflect the lack of consensus on implementation.
- The role of objectives / monitoring / indicators is not sufficiently treated.
- Albeit information management is a crucial aspect in ecosystem management, there is a lack of concrete obligations in the Ecosystem Approach.
- The “appropriate balance between conservation and sustainable use” demands concrete guidelines.
- Since there is no inherent logic in the order of the 12 principles a grouping of principles and a certain hierarchy might be useful to enhance the understanding and the communicability of the Ecosystem Approach.
- (Partly) overlapping principles (11+12, 2+7, 5+6) and the fact that the Ecosystem Approach is not free of redundancy impair the communicability.
- There is a clear need for more concrete guidance in the European / German Context (e.g., what are the implications for sector policies and for the different decision-making levels?)
- It is rather impossible to identify one appropriate level for the implementation of the Ecosystem Approach. Therefore, the Ecosystem Approach clearly needs a multi-level perspective and should link top-down with bottom-up approaches.

Making use of the Ecosystem Approach in a new Management System for Biological Diversity - Cross-Sectoral Co-ordination

OVE HOKSTAD

With reference to Article 6 of the CBD, which states that all sectors must take responsibility for integrating biological diversity considerations into their administrative tasks, Norway's action plan for the conservation and sustainable use of biodiversity was approved by the Storting (Norwegian parliament) in 2002. The action plan subtitled "Cross-sectoral responsibilities and co-ordination", presents the government's most important priorities, a new management system for biodiversity and joint action for the period 2001-2005 applying the principles of the Ecosystem Approach. All 17 ministries including the Sami parliament made contributions to the white paper that included about 300 different actions.

The government will give special priority to (see Figure 1):

1. National programme to survey and monitor biological diversity
2. Co-ordination of legislative and economic instruments
3. Information, research and expertise

The new management system for biodiversity will help Norway to make progress towards a number of goals:

- the conservation and sustainable use of biological diversity
- simplifying the public administration and making it more effective
- the transfer of more authority and responsibility from the central to the municipal level
- making it easier for decision-makers to weigh up different public interests
- making planning processes more cost-effective
- making land-use management more predictable, for example for the Ministry of Transport and Communications, Ministry of Defence, Ministry of Local Government and Regional Development and Ministry of Trade and Industry
- revision of legislative and economic instruments

Survey and monitor biodiversity

The new management system for biodiversity will require the identification of areas that are of great importance for biological diversity. To obtain this information, surveys and monitoring programmes must be initiated. In addition, a species data bank is to be established (see Figure 1). A committee consisting of representatives of the ministries involved is to put forward proposals on ways and means to progress the programme within January 2003.

Legislative and economic instruments

To ensure the conservation and sustainable management of biological diversity, legislative and economic instruments must be co-ordinated. They must also focus on areas that are of great value for biodiversity (see Figure 1).

Work is already in progress on the legislative instruments. A committee has been appointed by the government to evaluate the legislation on biological diversity and relevant sectoral legislation. Another committee is evaluating amendments to the Planning and Building Act to ensure that it takes biodiversity concerns more fully into account.

Moreover, the committee will review the ways in which it would be appropriate to link a new biodiversity act to other legislation under the Ministry of the Environment.

A review of all economic instruments that may have an impact on biological diversity is initiated. The review will consider changes in existing policy instruments and the need for new ones that clearly target areas of great value for biological diversity.

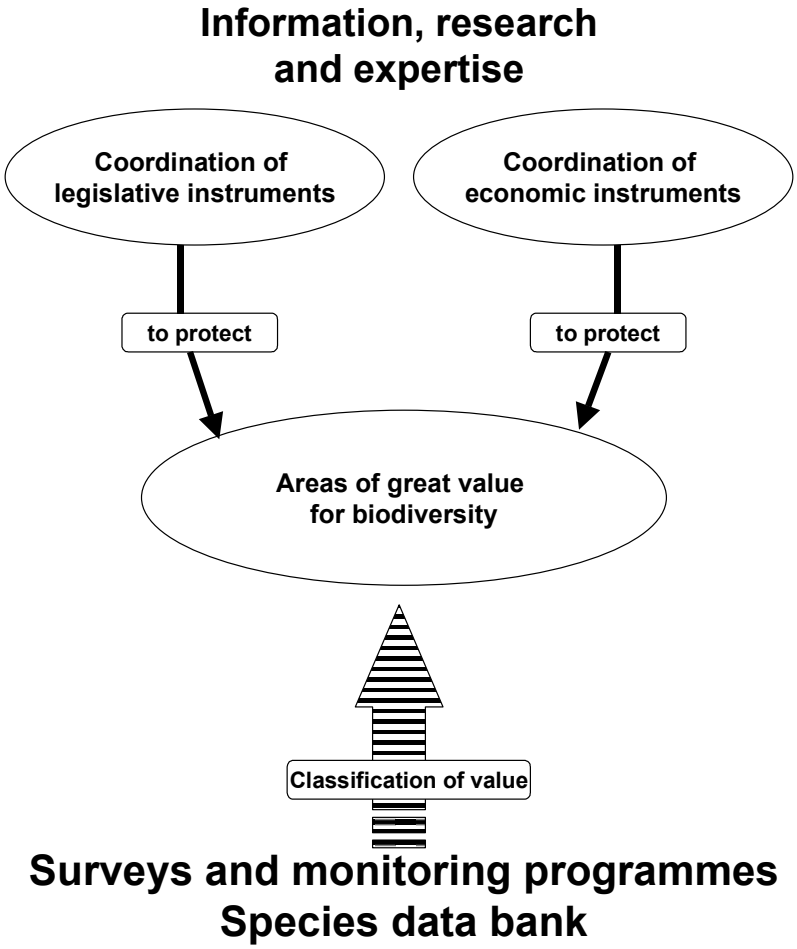


Fig. 1: Areas of great value for biological diversity are to be identified. This is to be done by means of surveys, monitoring programmes and the development of a species data bank. Legislative and economic instruments are to be adapted to protect the most valuable areas. Information, research and expertise are to be used for quality assurance of the system and to develop it into a useful tool for all parts of the central government and local administration.

The Ministry of Finance and other ministries that are involved will put forward any proposals that are formulated in the course of 2003. The tasks included in the review are as follows:

- To identify state-level financial arrangements, grants, subsidies, transfers, and financing, loan, guarantee and compensation schemes that have an impact on biodiversity.
- To review all these arrangements to evaluate what impact they have on biodiversity, and to consider how they can be altered to take into account biodiversity concerns or incorporate criteria or conditions to avoid damage to or loss of biodiversity.
- To propose amendments on the basis of the review, including a time schedule giving an order of priority and specifying who is to be responsible for further work.
- To review the possibility of introducing a land use tax. This review will take into account the review of legislative instruments and other green taxes.
- To take steps to ensure that the use of economic instruments by the various sectors to conserve biological diversity is reflected in their budgets.

The government's new management system is to be knowledge-based. Information, research and expertise will constitute the scientific basis for the development of the new system, which is to be built up in the period 2001-2005.

The Norwegian strategy and action plan for management of biodiversity makes use of the Ecosystem Approach principle 1 as a background, and principle 12 (involving all relevant sectors) as the main operative principle for the management system. The other principles (2 - 11) constitutes the necessary and urgent elements in the work to achieve a sustainable use of biodiversity.

So far the main factors to achieve success in developing the national programme on surveying and monitoring biodiversity seems to be giving the sectors enough time to develop their own thinking (work has been under way since the presentation of the biodiversity strategy in 1997) and to make them responsible for developing parts of the system (in working groups). A cross-sectoral committee has appointed working groups looking for proposals in the following ecosystems; agriculture, freshwater, forest, marine, mires and wetlands. Each working group is led by different sectors and will put forward their results to the committee in 2003.

Application of the Ecosystem Approach in Russia

A.S.SHESTAKOV

Russia is still the biggest country in the world with: high resource potential (including 22% of the world forests); vast areas of stable natural ecosystems (up to 60% of the total territory) providing ecological balance for the whole Northern Hemisphere; very unequal distribution of natural resources; federal system of state organisation and environmental management; and with economy in transition. The system for environmental management has been seriously changed several times since 1991 (last in 2000) following changes in political and economic systems and priorities. The current environmental legislation was formed during the 1990s and currently is under the process of review and deep reform focused on the redistribution of power between federal and provincial levels with an increase of federal competence.

Russia is a Party to the CBD since 1995 and recognised the Ecosystem Approach as a key element of the Convention implementation strategy. At the same time the term or the methodology titled as "Ecosystem Approach" is not officially named in legal documents. Nevertheless the different elements of the Ecosystem Approach are incorporated into environmental management and practice since the Soviet period or during the last 10 years (e.g., key elements of the principles 3, 6, 7, 12). Many of them are reflected in legislation (both at federal and regional levels). At the same time there is no comprehensive complex application or recognition of the Ecosystem Approach and segregated elements do not provide the integrated system. Many aspects of the Ecosystem Approach are only committed by legislation but are not enforced and implemented in practice (e.g., principles 12 or 10).

What principles do not work or have a substantial difficulties to be implemented in Russia?

Principles 1 and 2. These two principles are closely related to each other and their application in Russia has the same roots of not being successful. At the moment the general tendency is to strengthen the federal power and federal rights over natural resources including biological (to make all resources federal property). This prevents a real decentralisation process. Another problem which prevents management of the resources based on objectives formulated as a result of societal choice is a weak civil society which is not ready to make and promote its choice. Ownership rights over land and resources are not typical for the Russian traditionally communal society which treated most of its natural (and in particular biological) resources as a common asset. At the same time the centuries of administrative or command ruling system created the strong tradition of "government choice". The realisation of these principles is closely linked to Principle 12 which is declared more on "legal paper" in Russia rather than implemented in practice.

Principles 4 and 8. These principles have many obstacles for application in the countries with economy in transition suffering from deep economic crisis resulting in an enormous decline of industrial and agricultural production. Thus, the orientation of the Russian socio-economic development for the next 10 years is to increase the production based on a further development of the resources extraction sector (mining, forestry, fishing etc.). The present day policy is not to reduce market distortions that adversity affect biodiversity or environment but to reduce "environmental distortions" which affect short-term economic development. Conservation measures are considered as limitation for economic development which the country needs to provide economic growth. In effect, environmental limitations are cancelled in order to

reduce potential barriers for the investment process. Thus, the application of this principle is currently in contradiction with the new paradigm of economic development. There are no well developed and recognised methods for the full valuation of natural systems and the incorporation of their real values into the economic system. The idea of introducing ecological services into some of the current economic concepts is attractive, however not supported by any practical steps or working methodology concerning their assessment and incorporation into economic realities.

Principle 10. This principle was indirectly implicated in the Russian legislation in the 1980-90s, however the recent tendency is to come back to the distinction between conservation in isolated hot spots and "islands", and intensive use outside protected areas. At the same time there are still some legal provisions requiring some conservation measures and use regimes for different types of land use (e.g. different sets of normative for resource use and conservation measures for sectors or activities - construction, liquidation, energy sector operations, military activities, use of radioactive substances, treatment of chemical substances, wastes treatment etc. - , or land categories - agricultural lands, forest lands, water lands, settlement lands etc.). Difficulties are generally related to the same economic policies that hinder the implementation of the other principles mentioned above.

The application of the particular elements of the Ecosystem Approach is demonstrated by many field biodiversity related projects financed by the international community and is mostly implemented by NGOs. But these projects are still of pilot or demonstration nature. The main elements directly related to economy are neither enforced nor effectively implemented in international projects in most cases. The implementation of principle 2 could be provided only at the highest political level. Some elements of the Ecosystem Approach which are clearly expressed in the legislation (such as EIA or limits for the ecosystem use or impact on) are also implemented at all levels or kind of projects. Many successful examples could be presented.

Thus, in the Russian Federation the application of the Ecosystem Approach with all its 12 complementary principles is not achieved. However, many elements of the Ecosystem Approach are in place and successfully implemented in practice. A further promotion of the Ecosystem Approach in Russia needs:

- political commitment and societal capacity building;
- further development of the institutional and legal framework;
- better knowledge on the ecosystems and information for the decision making process including scientific and traditional knowledge;
- awareness, multi-stakeholders participation and involvement;
- technical capacity;
- long term perspective ensuring livelihoods and introducing economical and social incentives.

The Ecosystem Approach is not a new alternative or a competing concept or approach but more a kind of framework tool codifying the best existing management practices and ideas. Based on the gained experience it is possible to conclude that the Ecosystem Approach should become more "operational". To achieve this the further development of the Ecosystem Approach should be oriented towards guidance and should give directions and options for the implementation under different political and economic conditions. The relation to existing environmental management approaches should be more clearly expressed to avoid misunderstanding and any "competition" effects. The forthcoming SBSTTA and COP

meetings should further work on practical recommendations and decisions related to particular principles (for example to fulfil the work on incentive measures and sustainable use guidance) aimed at clarified guidance on their application both in national legal systems and in practical work. Principle 9 needs a clarification of the term "inevitability" in relation to human activities. Principle 6 requires further explanations and work on carrying capacity identification. The present 12 principles have some inconsistency and need to be reviewed to avoid some repetition, to achieve more logic (from general goal to particular tools), to provide better understanding of their meaning, and to operationalise the approach in general.

South Africa's Experience in the Implementation of the Ecosystem Approach

KHUNGEKA NJOBE

1 Introduction

South Africa is an active Party of major international agreements on biodiversity including the Convention on Biological Diversity. A range of conservation programmes are currently in implementation in South Africa and these include those on the expansion and development of protected areas; transboundary conservation; bioregional (ecoregional) planning; and on alien invasive species clearing. This brief intervention is on South Africa's experience in implementing the Ecosystem Approach and is based on two bioregional programmes (the CAPE and SKEP programmes) as well as on the *Working for Water* Programme.

2 A brief description of the programmes cited in this paper

CAPE - The Cape Action Plan for People and Environment is a biodiversity strategy and action plan programme for the Cape Floristic Kingdom. The plan was developed using a systematic conservation planning methodology with stakeholder participation and involvement. The planning phase was funded by the GEF and the programme is currently in its implementation phase.

SKEP - The Succulent Karoo Ecosystem Plan is also a biodiversity strategy and action plan covering the Succulent Karoo Biome. The planning phase of the programme was funded by the CEPF and it will enter its implementation phase in 2003.

Working for Water Programme - This is one of South Africa's premier conservation programmes aimed at controlling alien plant invasions that threaten biodiversity through utilisation of labour intensive methods. Its success has been its ability to balance conservation goals with development imperatives.

3 Experience in applying the 12 Ecosystem Approach principles

From the South African experience, none of the 12 Ecosystem Approach principles are seen to be unworkable however certain constraints preventing full implementation of these have been identified:

Principle 1 - In South Africa most conservation initiatives have stakeholder participation and involvement. However, there is still insufficient involvement of decision makers from sectors such as agriculture, mining and forestry. Conservation is therefore inadequately mainstreamed into the economic sectors of the country. Additionally, communities are also not always sufficiently involved. There is therefore a need to invest in **education and communication** of conservation issues and their relevance to different sectors of society. Secondly, there is a need to **promote conservation as land use that contributes to job creation and economic growth**.

Principle 2 - The SKEP planning process applied this principle. Conservation "champions" appointed from local organisations led the sub-regional planning processes and this approach proved very efficient and effective. Important considerations identified for the effective implementation of this principle in-

clude : the need to **build local capacity**; the need to agree on **common goals**; and **coordination** of local action with agreed upon goals.

Principle 3 - This is viewed as important from an ecological point of view. Constraining its effective implementation is the fact that responsibilities for management of natural resources are fragmented across institutions - administrative/ management boundaries do not always coincide with ecosystem boundaries. Therefore: conservation planning processes need to take into consideration **management/ administrative boundaries; partnerships and dialogue** between institutions need to be promoted; and action by various institutions needs to be guided by **commonly agreed upon vision and goals**. The CAPE Action Plan provides a vision to guide action by various stakeholders and a CAPE Implementation Committee has been established as a way of building partnerships and dialogue amongst the various governmental and non-governmental actors.

Principle 4 - This is the principle South Africa is grappling to implement. It requires that experts such as economists and financial experts be meaningfully engaged in conservation initiatives. Development of incentive frameworks for the various bioregions is only recently being tackled. The water sector is applying the principle of internalisation of costs and benefits - it is being argued that those who drive marginal cost should pay the marginal price.

Principle 5 - *Working for Water* bases its work and in particular the rehabilitation of areas post -clearing of invading alien plants on this principle. The systematic conservation planning models used in CAPE and SKEP take this into account explicitly and it can also be done at different scales. The shortcoming in South Africa's experience is that **freshwater systems and terrestrial systems planning are not sufficiently integrated**. There is also a need to translate the concept of "ecosystem functioning" into useful **management guidelines / indicators** - for example how do you set performance criteria for ecological functioning of a particular areas.

Principle 6 - This has been taken into account in the target setting of systematic conservation planning processes of CAPE and SKEP. However**, how do you ascertain the functional limits of an ecosystem**?

Principle 7 - There is a recognition that planning at differing spatial scales will achieve differing set of objectives. The CAPE, SKEP and other bioregional programmes being implemented in South Africa are being promoted largely for vision and goal setting and as a mechanism for coordination of conservation efforts. These programmes are also meant to be implemented over a long term (e.g. 20 years in the case of CAPE). As part of the CAPE implementation programme finer scale plans are being developed for biodiversity conservation in highly fragmented habitats such as in the highly developed City of Cape Town. The products of these plans should be of more value for resource managers.

Principle 8 - Both CAPE and SKEP are planned to be implemented for the long terms. However, **ecological monitoring** systems need to be built into implementation programmes.

Principle 9 - Both SKEP and CAPE have built this consideration into the target setting for conservation. Adaptive management, however, is still difficult to implement effectively mainly because in transforming South Africa, there has been rapid changes in many conservation institutions.

Principle 10 - This principle has made it into South African formal policy and promotion of eco-tourism provides an example of how this has found application. The Agulhas Biodiversity Initiative (ABI) a pro-

ject under the CAPE programme is piloting this concept - a component of the project is looking at creation of markets for sustainable harvested fynbos flowers as way of further stimulating local economic development.

Principle 11 - The planning processes of the CAPE and SKEP took into consideration scientific and stakeholder knowledge of for example farmers, local communities and other land users. This approach worked well, however, it is yet to be tested in implementation and management.

***Principle 12* - This principle has been applied in CAPE, SKEP and *Working for Water* processes. It requires that be consciously designed into the relevant processes and skill is required to glean and integrate the various perspectives and views.**

Municipalities and Protected Areas: the Case of the Sajama National Park, Bolivia

GUMERCINDO BENAVIDES, CARLOS W. ESPINOZA T., DANIEL MAYDANA & MARIO J. BAUDOIN W.

After several years of implementation of the Popular Participation Law and of the National Service of Protected Areas, it has become evident that two different logics are in practice in the planning and development of municipalities and protected areas. It has become also evident that this practice generates mismatches among both entities operating in one territory.

The Bolivian legislation assigns important competencies both to municipalities in the promotion of municipal development and to the National Service of Protected Areas (SERNAP) in the management of the protected areas. It also establishes a participatory 'planning' process and the 'plan' as a management tool. The Municipal Development Plan (PDM) is a medium term municipal development planning tool, product of a participatory planning process. Sectoral or special plans at the municipal level form part of this plan. On the other hand, the Protected Area Management Plan (PMAP) is essentially strategic, specific and long term. Both instruments are drafted with different visions and methodologies and for different public instances. In consequence, both plans are not compatible. However, as the Law of the environment (1992) grants SERNAP special competence in environmental management in protected areas and also decentralises certain competencies in environmental management at the municipal level, the overlap of competencies that are common to both institutions generates the need to co-ordinate planning. Furthermore, both public instances have developed processes of participatory planning which often involve the same actors.

However and in spite of these advances, in practice the municipality and the protected area, that partially share the same territory, hardly relate to each other. They still maintain a different logic for the planning, participation and management of their territories. The protected areas have carried out little or no effort to force municipalities inside their limits to contribute or participate in their management in an institutionalised way. Likewise, the municipalities have not attempted to summon the protected area to the processes of municipal development. This explains why at present PDMs do not involve the management of protected areas.

Nevertheless, the protected areas have created spaces for approaching and co-ordinating with the municipalities through the constitution of Management Committees for the protected areas, in some cases, and in others, through the Annual Operative Programming (POA) of the municipalities.

SERNAP's new policies

In recent times, the SERNAP has been promoting the active participation of local actors in the management of protected areas, in the conservation of natural resources in buffer zones, and in nature tourism. This is a clear sign for the importance of protected areas for municipal and regional development. These policies of rapprochement to the municipality seek to integrate the two logics of territorial management in pro of the development of those municipalities.

Specific situation of the municipality and the Sajama National Park

The Municipality

The municipality of Curahuara de Carangas is located in Sajama County (Department of Oruro) with the Sajama National Park (SNP) located within its territory. In 1939 this park was the first created in Bolivia.

The municipality comprises an area of 2,786 km² (ca. 48% of Sajama County). The county is constituted by four cantons: Curahuara, Sajama, Lagunas and Caripe. After the enactment of the Popular Participation Law, the county has been organised in two Municipal Districts. The first one corresponds to the Administrative District "A" that is Curahuara Canton, conformed by nine Ayllus. The second corresponds to the Administrative District "B", which is conformed by the cantons Caripe, Sajama and Lagunas.

Characteristics of Sajama National Park

The SNP is characterised by its exceptional natural and cultural patrimony. Its population originates in pre-Spanish times and is concentrated in four populated centres and 80 dispersed farms. The largest part of its area belongs to the municipality of Curahuara, as most of its population (56%). It also possesses exceptional scenic beauty (dominated by Mount Sajama, high Andean lagoons, thermal waters, etc.). It houses a diversity of species of wild flora (154 registered species) and fauna (108 species), peat bogs, archaeological and historical sites of great cultural value and it is a reservoir of genetic resources of the domesticated South American camel relatives (llamas and alpacas). However, due to human pressure certain species of wild flora and fauna and natural ecosystems are threatened.

The Relationships

The SNP generates important opportunities to develop alternative sustainable use of natural resources (ecological cattle raising and eco-tourism) in the municipality of Curahuara. At the same time, the SNP generates conflicts in the use of natural resources in the communities both inside and outside of the park.

While in the local population's opinion the area of SNP is restricted to the mountain or Tata Sajama (Father Sajama), the initial management activities did not cause major difficulties with the local population because of their limited scope and because the activities were restricted to the canton Sajama. However, when in 1996 the protection program was implemented, conflicts with the population increased. This was partly due to the damage that some predators inflicted on the native domestic animals and on their fodder (puma, fox and the vicuña).

Today, the population of the communities inside and outside the SNP see themselves heavily affected by damages to their traditional systems of production through wild animals. That is due to an increase in the populations of puma and fox over the last five years and their intensified toll on domestic animals. At the same time, the population of vicuña competes with livestock (alpacas and llamas) for natural pastures and cultivated forages diminishing the revenues of the population. These circumstances have tensed the population's relationship with the park, in spite of the fact that the participation of farmers organisations have been incorporated to the management of the park through the Management Committee. The relationship between the administration of the SNP and the communities has turned out to be conflictive.

Until 1996, activities in the SNP were implemented in a 'top down' approach. Later, the administration of the park incorporated the participation of the population in the management of the park. However, it co-ordinated very seldom with the municipal government, mainly due to the lack of interest of both, as is shown by the absence of the SNP in the municipalities planning.

MAPZA's role

The Management of Protected Areas and Buffer Zones (MAPZA) is a project of the German Technical Co-operation (GTZ) dedicated to capacity building within the SERNAP. In the case of the SNP, it aids the administration of the park in the formulation of management instruments for the protection and conservation of biodiversity and natural resources. It also carries out promotion of eco-tourism based on local initiatives and capacities and sensitises the population on the conservation of biodiversity and sustainable use natural resources.

As progressive rapprochement with the municipal government was carried out, the need to co-ordinate activities between the municipality and the SNP became evident. Starting in 1999, MAPZA carried out efforts to intensify the relationship between the SNP and the municipality on the basis of their common interests. However, the resolution of existing structural mismatches between the SNP and the municipality are not within reach of the project.

Increased Interest of the Municipality in the Management of the Sajama National Park

The growth of tourism in the SNP and the opportunities for more investments have elicited interest by the municipality. This has induced the municipal government to establish more formal and more structural relationships with the park administration. It also meant generating mechanisms and spaces that allow the SNP and the municipality to establish co-ordination and agreement processes of the two logics at work.

At the end of 2000, the Municipal Government of Curahuara took the initiative of reformulating the PDM to include many unforeseen strategic activities such as 'eco-tourism' and the proposal to develop native camelid cattle raising, which was elaborated by MAPZA for the SNP. This decision opened an opportunity to dialogue and to begin the integration of the SNP to municipal development. Clearly there was the political will on the part of the municipal government to approach the topic in question leading to the inclusion of political and management objectives of the SNP into a reformulated PDM.

Managing the Process of Integration of the Municipality and the Sajama National Park

The municipal government negotiated the financial resources to execute the reformulation of the PDM from funds of the second phase of the Rural Communities Development Project (PDCR -II). Thus the consultant Centre of Andean Planning (CEPLAN) was hired to take the responsibility of reformulating the PDM, which began in January 2001.

Before the start of this process a meeting with national executives of PDCR-II, the municipal government and the MAPZA was carried out. Later, other meetings took place in Oruro with the purpose of analysing and co-ordinating the integration of the objectives of the SNP into the PDM. In the meeting at the national level the importance of enriching the planning methodology was analysed, including the integration of the participatory management plan of the protected area. At this level, the proposal was not assumed with the same interest of the national executives.

The municipal government, in co-ordination with MAPZA/SERNAP, convened the authorities of the nine Ayllus of Curahuara, the health and education authorities, and the development capacity building institutions to the reformulation of the PDM. On this occasion, the modality, the chronogram and the responsibility of the institutions were agreed. A technical inter-institutional committee was also organised in such a way that these institutions as well as the social actors and the municipal government participated in the reformulation process. The main responsibility for the execution was given to (and ratified by) the consultant CEPLAN and a follow up committee.

The Objectives of the Integration of the Sajama National Park into Municipal Planning

The actors have agreed that when the SNP is integrated into the development planning of the municipality of Curahuara the following objectives should be reached:

- Incorporation of the concepts of biodiversity conservation and sustainable use of natural resources of the protected area and of the buffer zones to the PDM.
- Incorporation of productive strategies (camelid cattle raising and eco-tourism) compatible with the conservation and sustainable use of biodiversity and natural resources to the PDM.
- Systemising the reformulation process of the PDM of the municipality of Curahuara to contribute to the methodology of similar processes.

The conservation values incorporated into the PDM should be identical with the objectives of the PMAP of the SNP and the management of the productive activities of the buffer zone. These objectives are:

- The natural resources in current and potential use that should be conserved or sustainably used are: peat bogs, the grasslands, Thola scrublands and camelid germplasm. At present, these resources provide the basis for the local economy.
- The cultural resources that should be protected are the archaeological (chullpa burial monuments, ruins, Incan fortresses) and historical (colonial temples) sites that next to the natural landscapes and unique geological features constitute the basis for the development of the eco-tourism activities.
- The wild species threatened by extinction that should be protected such as the keñua (*Polylepis tarapacana),* the yareta *(Azorella compacta)*, the suri (*Pterocnemia pennata),* the quirquincho (*Chaetophractus nationi)*, and the Andean cat *(Felis jacobita)*.
- The recreation of sustainable management models through the recovery of traditional knowledge, through scientific research and planning of the use of the shepherding areas, through the management of water and grasslands in order to recover degraded areas, to conserve peat bogs and grasslands, and to improve native cattle productivity.

The purpose of the integration is that the population of the municipality, including the SNP, uses natural resources in a sustainable manner. The municipality will cooperate through mutually agreed management.

Implementation of the Experience

Implementation Structure

The reformulation of the PDM has been executed under the following division of work. Execution was assumed by the consultant CEPLAN, general co-ordination by the municipal government and the

MAPZA, rural participation by their traditional authorities, and the technical consistency and analysis of the by-products of the planning process by the inter-institutional technical committee.

The approach has been fundamentally participatory. Rural organisations (the Ayllus), health and education authorities, development aid institutions (Yanapanaku, CECI, PADEM), the MAPZA project and the municipal government have driven the experience. Dialogue with authorities, encounters in the field with the population and mutual learning among professionals and the local population were given priority.

The role of the inter-institutional technical committee was very important in the consistency analysis of the information and of the proposals. Furthermore, with the given experience of its members it provided an appropriate orientation to the consultant's work. Its contribution to the final document must be judged very positive.

The municipal government's political will and the facilitator role of the MAPZA were vital for the implementation of the reformulation process.

The Role of the Actors in the Process

The integration of the SNP into the PDM was possible thanks to the work of those actors that have participated in this experience. The role of each of the actors can be characterised as follows:

- The **Ayllus**: They are the original and traditional organisations of the old dominion of Carangas. They have competencies in territorial management, enjoy the biggest respect and prestige, and in the sector of the Ayllus of Curahuara they are the most important organisations with which anybody has to co-ordinate any activity. They have contributed to the co-ordination of the self-diagnoses and their authorities have validated the information giving consistency to the content of the PDM.
- The **cantons**: They are important political-administrative units with the corregidors as their highest authorities. Albeit their participation has not been not very protagonistic, they were necessary to co-ordinate the diagnosis activities inside of the protected area.
- **Development institutions**: The NGOs that contributed to the development of the municipality are:
  - GRAMA, an environmentalist NGO that supports the SNP;
  - PADEM, which is a capacity building municipal project; and
  - Yanapanaku, an agricultural services NGO.

  They have contributed with their experience, their suggestions and their involvement in the process of reformulation through the technical inter-institutional committee.
- **MAPZA**: It is a capacity building project for the SERNAP. Despite of rather being identified with the activities of the SNP than with the municipality, its role has been fundamental in the facilitation and co-ordination of the institutions. It helped clarify the advantages of the integration of the SNP to the municipal plan and facilitated the Ayllus participation in the reformulation. It also contributed to the process, hiring a full time technical adviser to carry out the studies needed to aid the production systems.
- The **SNP/SERNAP**: It is the public institution that manages the park. Its participation in the process was limited. This was perhaps due to its critical relationship with the communities, which was dete-

riorated by the damage caused by wild animals to cattle raising. Its absence in important moments had been notorious.

- **CEPLAN**: This is a private consultant with working experience in planning of rural municipalities' development. Its work in the whole process has been influenced by demands of the PDCR-II. Their planning logic is more product than process oriented and its focus does not necessarily share a vision of municipal development that includes conservation of biodiversity and sustainable use of the natural resources.
- The **municipal government**: This public institution constituted by the Mayor and the Municipal Town Council is responsible for local development. Its role has been vital in the management of the whole process. Though quite cautious at the beginning it became much more active over time and assured that the process concluded satisfactorily. However, there were some weaknesses in its participation, not for the lack of will but for its limited capabilities in environmental issues.
- **Surveillance Committee** (CV): It is the social control and supervision organ. The president of the CV was the facilitator between the Ayllus and the executing agency and its contribution in the second stage of the process was very valuable.

Lessons learnt

The contribution of this experience could be enriching for similar processes in those municipalities that are partly or totally within a protected area. It has allowed us to learn lessons from its achievements and difficulties. Here we extract those more outstanding aspects of the experience by way of conclusions and recommendations.

The insufficient socialisation of the management objectives of the SNP and the limited integration of the protected areas to municipal management did not provide adequate conditions to implement the process in the municipality.

In the process of reformulating the plan, it was not possible to analyse with enough clarity those aspects related to the management of the protected area and even less their potential benefits, in spite of meetings in which the work was socialised. It was evident that there was a need for more information and promotion both in the cantons of the SNP and in the Ayllus of Curahuara in order to be able to analyse the benefits and problems that protected areas cause to the communities. The paradoxical thing is that the population of the cantons within the protected area - one supposes that they are more informed about the park - showed little motivation or even reluctance to discuss about the role of the SPN. This might be due to the fear that the municipality assumes a bigger role and gains bigger benefits from the park, e.g. from tourism.

In similar circumstances, it would be better to begin the process with communication activities and socialisation on aspects related to the objectives and management goals of the protected area and the objectives of the integration process of the protected area into municipal development. This would facilitate a more rich and objective discussion by local actors, and would generate agreement conditions in the process of integrated planning.

The constitution of a technical inter-institutional committee facilitates the contribution and sharing of responsibilities of the institutions for the analysis and validation of the process results.

It was expected that the process of adjustment of the PDM, beyond integrating the protected area to the municipal dynamics, involved the responsibility taking by the social actors, especially by the institutions that lend services of technical advice to the municipality and the SNP. It was important to directly involve the rural organisations (Ayllus and cantons) and the other organisations to obtain a validation and consent for the proposal and for the implementation of the reformulated PDM.

In this context, the technical inter-institutional committee facilitates the participation of key institutions in the process, their qualified contribution in the formulation of the proposal and their responsibility taking as much in the process as in the implementation of the PDM. For future projects it is advisable to constitute a similar mechanism, provided well defined functions.

It is desirable that the management of the protected area and the municipality become partners to execute the integration of the protected area into the management of municipal development through participatory planning.

In the process diverse difficulties, though surmountable, have affected the process. The incompatibility of the modalities and schedules for execution between the financial entity and the one desirable for incorporating the SNP into the PDM as well as some contractual conflicts between the financial entity and the consultant caused discontinuity in the process and insufficient work co-ordination. The consultant had serious difficulties in participating with enough time and dedication in the adjustment of the PDM since the PDCR did not pay in advance. Because of the need for paying its personnel, the consultant felt impelled to contract other work commitments.

Furthermore, as described above the logic of the PDCR-II (backer), the MAPZA and the municipal government were not necessarily compatible. Somehow the work of the executing agency - by demands of the financing agency - was oriented to obtain a 'product' (the PDM) without considering the 'process', while it is the process alone that sensitises and develops a sense of ownership in the actors. However, these difficulties have been solved progressively thanks to the facilitation role of the MAPZA.

In light of these events, it is advisable that the SERNAP and the municipal government become partners to integrate the management of the protected area into the municipal development and to formalise their roles and tasks through a formal agreement. Also, independently of the source of the funds, the execution responsibility should be in both institutions and they should organise an executing team constituted by professionals from both entities. Only in this way it will be possible to build a flexible methodology adequate to the rhythm and timing needed to focus on the 'process' logic rather than on the 'product'.

It is strategic and convenient that the municipality counts on a partner which is qualified in environmental issues to follow up and exercise a technical inspection of the process and its outputs.

In the reformulation process, the municipal government had difficulties in pursuing its work and the technical dialogue with the executing agency, because environmental management and themes related to the SNP were not in the domain of the municipal government's members. Although they must not necessarily know the thematic area they could provide a professional representing their interests in this field in order to encourage the municipality to follow up and take part in the participatory planning process.

The specialised studies have contributed progressively to generate a favourable atmosphere to analyse the conflicts and benefits in the use of the natural resources of the protected area and buffer zones.

In the process of reformulating of the PDM, the MAPZA presented partial results of studies such as 'identification of socio-cultural units'. This allowed to zone the municipality and to have a diagnosis of its landscape and its historical and cultural patrimony. Thus the population has come to value the existence of these resources and agreed on municipal strategies of eco-tourism and natural resource use.

The results of these specialised studies generated a working atmosphere with the rural organisations. The provision of information promoted a favourable opinion toward incorporating the protected area into the management of the municipal development, created expectations about the potentialities of the tourism and cattle raising, etc. These reasons advise on the convenience of accompanying the planning process with respective studies and making them available to the population.

The absence of commonly shared concepts in the area of protected area management or municipal development limits the definition of the methodology and the focus of work.

It happened that each participating institution in the experience - including the consultant - had a different understanding of the concepts of 'conservation' and 'development', of their application in protected areas, in buffer zones and in the municipality. Also, few professionals managed these concepts in operative situations. The same thing happened with the work focus. In some degree, the limited agreement on concepts and work focuses hindered the beginning of the process, the definition of the work methodology and consent development throughout the whole project.

Therefore, it would be important that when beginning such a process, a common understanding of protection values, conservation of the protected area, strategies for sustainable production and other concepts is developed among the participating institutions.

It is fundamental to assign specific roles to each of the institutions that are involved in the process according to their specialities, in order to establish the structure of implementation.

At the beginning of the experience, the roles and the contributions of the institutions were clearly established - in spite of the constitution of the technical committee - or they were taken for granted. The evident thing is that the co-ordination of work and the taking on of responsibilities were hindered. For example: the municipal government was loosening up on following up the work, the administration of the SNP was absent in key moments of the process, the MAPZA was proactive to the point of substituting the roles of the municipal government and of the administration of the SNP, the scarce participation of the public institutions (Prefecture, SERNAP), etc. However, the participation and effective contribution of the institutions to the achievement of the experience has grown during the process.

Therefore, it is desirable that at the beginning of the experience the roles and tasks of each of the participating institutions in the process is defined. This should be reflected through mechanisms such as formal and inter-institutional agreements.

The municipality and the protected area should strengthen to implement the integrated municipal development plan.

There is a marked tendency for PDMs not to be implemented as they were conceived. Given the time and resources invested, it is necessary to assure a setting for an appropriate execution of the PDM.

Thus it is recommended that the municipality as much as the protected area should build capacity in aspects related to environmental management and sustainable use of natural resources.

The integration of the protected area into the management of municipal development generates comparative advantages both for the municipality and for the protected area.

In the following there are named some of the advantages that have been identified:

- The integrated PDM is an instrument that generates political conditions and techniques to develop economic activities compatible with conservation objectives.
- The experience of the protected area in the development (promotion and management) of eco-tourism and the opportunity of integrating in a circuit the tourist sites of the municipality with those of the protected area, activates the economy of the municipality.
- Facilitated access to investment for both sustainable productive projects and for conservation and environmental projects.
- The implementation of an integrated PDM allows to consolidate the buffer zone and to articulate the SNP to the communities of the municipality.
- The implementation of an integrated PDM consolidates the participation of social actors and the municipal government in the management of the protected area and legitimates the social and political objectives of the protected area

The Ecosystem Approach and the Itombwe Forest ICDP in the DR Congo

LAURENT NTAHUGA

A. The Project

1. General context

Itombwe Forest is located in eastern DR Congo on the north-west corner of Lake Tanganyika in South-Kivu Province. While the Itombwe massif itself might be defined by the area of high ground above 1,500 m a.s.l., the region of conservation importance descends to about 900 m and covers roughly 16,200 km^2. Despite recognition of its value from a conservation stand point no part of Itombwe is officially protected although it is probably the most important of the Albertine Rift mountain forests.

Based on the recommendations of the regional priority-setting workshop convened by ARCOS (Albertine Rift Conservation Society) in Kampala in July 1999, a group of Albertine Rift experts discussed in Libreville, Gabon, in March 2000, during the "WWF eco-regional priority-setting workshop for the Congo basin", a possible strategy to initiate a community conservation programme in Itombwe, facilitated by ARCOS, in collaboration with ICCN (Institut Congolais pour la Conservation de la Nature) and other ARCOS local partners. Thus, a project proposal came into being which was successfully submitted for funding to WWF/World Bank Alliance for Forest Conservation and Sustainable Use.

2. Objectives and planned activities

The main causes of the recorded forest degradation include intensive gold mining, cattle grazing, slash and burn agriculture, commercial plantations, medicinal plants, fire-wood and timber collection, hunting for bush-meat, in a country that is specifically marked by poverty of its populations. Hence, the main objective of the ICDP on Itombwe area was to maintain the biological integrity of the Itombwe mountains and an adequate balance between human uses and ecosystem productivity.

Specific objectives of the initiative included:

- review and synthesise findings and recommendations from previous studies, taking into account biological and socio-economic aspects and the priority actions identified.
- conduct a review of the current biological and socio-economic situation of predetermined area of conservation concern on the ground.
- identify relevant actions in consultation with the various stakeholders but specifically indigenous people and local population.
- support priority actions identified with local communities in order to reduce pressure on forest resources.

In accordance with the above mentioned main and specific objectives, the following activities were planned :

- convening of a consultation meeting in Bukavu to obtain information from key players on the planned surveys in pre-identified areas;
- compilation of knowledge gained from previous surveys and recommendations;
- contacting local people: leaders, local populations, grassroots, etc… ;
- conducting of a field study on the assessment of the biological status of the forest and the socio-economic status of the area;
- implementation of identified micro-projects in pre-determined localities together with local stake-holders to stimulate their adherence to the ideal of conservation and sustainability in the use of bio-logical resources.

B. Application Of The Ecosystem Approach Principles

Looking at the 12 Ecosystem Approach principles, only 6 (1, 2, 5, 10, 11, 12) could be met by the IF/ICDP that has been carried out in 2000 in the Albertine Rift region in DR Congo. Six others (3, 4, 6, 7, 8, 9) couldn't materialise.

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

Itombwe local communities including indigenous people, farmers, pastoralists, traditional and local administration were important stakeholders committed in the conservation of the Itombwe Forest (IF).

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

Local partners involved in the implementation and management of the project at leading level were community elders and traditional community heads together with the local administration.

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

IF is such a large area (± 16,200 km²) that full concentration was laid only on it. No attention couldn't be paid to adjacent ecosystems as Lake Tanganyika, subsequent highland savannahs, etc… , which are very important biodiversity areas.

4. Recognising potential gains from management, there is a need to understand the ecosystem in an economic context.

In the long run, it was intended to promote sustainable use of IF biological resources by the local populations which was the central conservation concern about the ecosystem.

5. A key feature of the ecosystem approach includes conservation of ecosystem structure and functioning.

Stopping deforestation on the eastern steep slopes was a priority. As a matter of fact, deforestation would lead to strong wind and water erosion and subsequently to severe land degradation ending up with heavy biodiversity loss.

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

Afforestation programmes had to take into account the slowness of forest tree species growth unless alien trees would be used (Eucalyptus, Pinus, etc…).

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

IF is a complex but homogenous forest ecosystem characterised by high endemism (as part of the Albertine Rift mountain forests), where normally diverse animal and plant species interact among themselves and with non-biotic environment in well balanced way.

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

One of the motivations to involve local communities, indigenous people, elders, local administration, etc… in effective IF management was the assurance of the long term management and conservation of the forest. This would have worked if we could have secured funds for the follow-up project proposal.

9. Management must recognise that change is inevitable.

IF/ICDP didn't last long enough to face the issue of inevitable change (6 to 7 months only).

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

IF is a non-protected area where people have recognised the danger of uncontrolled natural resources use. They were willing to a controlled use of biodiversity under the lead of their own chiefs to avoid exhaustion of the resources on which they depend in their daily life (timber, bush-meat, fuel wood, etc…).

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

Traditional community elders were part of the leading teams at the different sites for the respectability they inspired but also for their knowledge on forest conservation and sustainable utilisation (hunting, medicinal plants, etc.).

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

IF has faced degradation of its resources mostly because of poverty. Hence the idea of a stimulating project targeting simultaneously conservation and socio-economic development of the Itombwe region.

C. How to improve the Ecosystem Approach

The Ecosystem Approach needs some improvement so that it can be within anybody's comprehension. In line with this objective, I would make at least the following suggestions :

- modify the expression style so that the 12 principles can be read and understood by the common man. In this connection, the CBD is an excellent example;

- reduce the principle number from 12 to only a few of them either through grouping of principles referring to the same objectives, shortening of their quantity, or otherwise.

Sustainable Forest Management in Germany: The Ecosystem Approach Reconsidered

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(This summary is taken from the full report: HÄUSLER, A. AND SCHERER-LORENZEN, M. 2001: Sustainable Forest Management in Germany: The Ecosystem Approach of the Biodiversity Convention Reconsidered. BfN-Skripten 51. Federal Agency for Nature Conservation, Bonn.)

In past years, the recognition has increasingly prevailed that biological diversity in its different varieties can be successfully sustained only if it is understood in connection with the ecosystem, and if one takes into consideration the multitude of its interactions with humans living in and subsisting on ecosystems. Therefore, within the framework of the Convention on Biological Diversity (CBD), what is now referred to as the "Ecosystem Approach" was developed as basis for the implementation of the convention.

This sub-study, prepared within the scope of the R&D project "Developing Concepts for 'Sustainable Use' in Selected Sub-domains of Biological Diversity", aims at analysing the current state of forest use in Germany with regard to its compatibility with the frame of reference set by the Ecosystem Approach. A general summary of the current situation and management of the German forest is given in a first chapter, providing the basis for a better understanding of the evaluation of forest use with regard to the Ecosystem Approach.

Today, almost one third of the territory of Germany is covered with forest, and forested areas have gradually increased over the past decades. Contrary to the natural potential vegetation, only about one third of the total forest area is now stocked with broadleaf trees. The other two thirds are predominantly pure or mixed conifer forests. In Germany there exists an extensive system of legal provisions pertaining to the forest sector, according to which all forest owners are under the obligation of "sustainable, proper management". Besides the economic utility of the forest, "the continuous capacity of the natural resources" and other functions of the forests (conservational and recreational functions) need to be taken into account, too.

Based on the concept of "multifunctional forest use", several management systems were developed in Germany, which are setting different priorities concerning the functions of the forests, however. All types of management ensure the quantitative sustainability (harvest ≤ re-growth, i.e. material safeguarding of raw material), but differ in their fulfilment of extensive ecological and social criteria of sustainability. In future, these criteria should be taken more into account through the introduction of certification measures or through the initiation of Forest Programmes on a national and federal state level.

While, by and large, the principles of the Ecosystem Approach of the CBD are being taken into consideration in German forest management, there is certainly a need for further development in some fields.

The societal choice regarding the objectives of ecosystem management as postulated in Principle 1 is mainly affected by the existing ownership structure. While in privately owned forests the consideration of claims from different actors is usually restricted to the legal requirements, those claims are generally dealt with more appropriately in state-owned forests. Nevertheless, there are often rivalling claims to use, which frequently result in conflicts. The involvement of the various stakeholders in management decision within the scope of the National Forest Programme, and of certification activities, may be a feasible method to help solve such conflicts.

In accordance with Principle 2, decentralised structures involving comparatively small areas, in the form of local forest authorities, are in charge of all management activities regarding Germany's forest ecosystem. Although with regard to decisions made on the basis of global or national effects, local management is limited in its authority. However, local groups, owing to their competence, can contribute to the solution of urgent issues. That is why in individual cases or areas, centralised and decentralised approaches should ideally coexist or be inter-linked.

Ecosystems are connected with each other, both locally and globally. Therefore, management activities in any ecosystem inevitably have effects on other systems, which according to Principle 3 should be considered by ecosystem managers. In order to be able to assess those effects, a sound knowledge of the functional interactions between the individual ecosystems is required. Even though interactions of this kind are comparatively well known with regard to Central European forests, there is a need for further research in this area. With the mapping of forest biotopes, a first step has been taken in the direction of avoiding negative effects on special biotopes within forest stocks. However, the present inventory of such biotopes, together with appropriate recommendations for their maintenance, is far from comprehensive.

The vast majority of German forests must be regarded as fully managed forests, which have been understood in a purely economic context and managed intensively for a long time (Principle 4). In the meantime, previous subsidisation programmes with an unfavourable impact on forest biodiversity have been revised and complemented with new criteria directed at the ecological management and conversion of forests. While there are promising efforts directed at a reduction of market distortions and the creating of positive incentives, there is still room for improvement as regards the internalisation of costs and benefits in the given ecosystem.

Apart from "ecosystem goods", forests also provide a number of "ecosystem services". Therefore, conservation of structures and functions should be a priority target of the Ecosystem Approach (Principle 5). While in the past there has been a distinct focus on the commercial function of forests - leading to a form of management aiming at the maximisation of ecosystem goods production - the significance of the conservational, recreational and nature protection functions is now growing in Germany. While the ideal of multifunctional forest use takes the importance of ecosystem services into account, the ecosystem services significantly lag behind the ecosystem goods in reality, contrary to this ideal.

The requirement that ecosystems must be managed within the limits of their functioning (Principle 6) is consistent with the requirement for management within the limits of sustainability. This means that an assessment depends on a tangible and measurable definition of sustainability. In the sense of quantitative sustainability within a forest-economic framework, this principle has already been implemented in Germany.

A look at the natural life cycle in the forest ecosystem, ranging from the regeneration phase and the optimum phase to the old-growth stages, tells us that this process may easily take several centuries. Thus, the development of the sustainability in forest management was based upon the integration of time intervals encompassing several generations (Principle 7). In various developmental stages of the forest, however, the managing forest owners are unable to attain "useful" wood assortments. Consequently, certain phases are being deliberately shortened (regeneration phase) or even eliminated (old-growth phase) as a result of management activities, but also of e.g. the legal obligation for reforestation.

Due to the ownership structure, forest management in Germany is practised on areas of extremely inhomogeneous size (ranging from a few areas to several thousand hectares). For the purpose of forest management, the forests of Germany are furthermore divided into various planning and operational units. Therefore, the implementation of appropriate spatial scales of management as postulated in Principle 7 will be a rather slow and lengthy process. On the model of a natural Central European forest, which can be described as a "mosaic" of various stages of succession, the area size chosen for interventions of forest management should primarily be aligned with the dimensions of this natural mosaic.

In view of the long temporal scales of ecosystem processes in forests, it goes without saying that appropriate management too must inevitably be set for the long term (Principle 8). This Principle is a logical consequence of Principle 7, and it seems therefore appropriate to treat those two principles as one.

Silviculture recognises that management is dependent on the natural site conditions, on disturbances due to natural events, and on the resulting changes in the ecosystem (Principle 9). In addition, man-made phenomena will have to be increasingly considered in future, although they are largely beyond management on a local level (e.g. climate change, atmospheric pollution, etc.), and must therefore continue to be discussed and dealt with on a higher level of both society and politics in order to arrive at strategies for their solution. Nevertheless, forestry will have to deal intensively with the issue of how silviculture can contribute to an improved capacity for response and adaptation to changed and changing basic ecological conditions.

Principle 10 bears on the objectives of the CBD, that is, the conservation and sustainable, equitable use of biodiversity. Likewise, the ideal of multifunctional forest use allots equal importance to the aspects of use and protection. However, this model of equivalence can hardly become operational in practice since as yet 90% of the proceeds from our commercial forests are obtained from the sale of wood alone. Thus, forest owners make little if any "investments" in the conservational functions, and nature conservation in the forest is still often practised within the meaning of the "wake theory". Concepts to launch a system of remuneration of ecological services, in particular in privately owned forests, should therefore be developed without delay. In addition to that, the implementation of zoning concepts must be followed up, comprising areas with different intensity levels of utilisation provided that comprehensive criteria for sustainability are met ("protection in spite of utilisation"). It must be ensured, however, that such a zoning model is more than just a segregative approach involving the designation of areas under strict protection on one hand and areas that are set aside to be managed, and do not fulfil any conservational functions, on the other hand.

Forest management in Germany is based on a long tradition of experience, traditional knowledge, and research, and is therefore compatible with Principle 11. Although there has always been some sort of feedback from research to practice, it is mainly the communicative aspect of the know-how transfer that needs to be improved in Germany in order to be able to consistently implement this principle. In the field of forest research, inter-sectoral and multidisciplinary projects should to be developed and promoted more than ever.

The involvement of all relevant sectors of society and scientific disciplines (Principle 12) has been, fairly successfully in this domain, put into practice predominantly on a regional, national, or even international level, whereas the involvement on a local level must be rated as rather poor, due to the ownership struc-

ture prevailing in Germany. Since the involvement of the various relevant sectors of society is usually dependent on the consideration of knowledge and information, Principles 11 and 12 should also be treated as one.

The five operational guidelines of the Ecosystem Approach, which are meant to be applied in the implementation of the principles, are only briefly dealt with since their content greatly resembles the preceding rationales regarding the principles, and since their wording is sometimes even more general. In the assessment of forest use in Germany on the basis of the Ecosystem Approach, we encounter the basic problem that the wording of the principles and guidelines is held so general that it permits a host of different interpretations. Thus, the Ecosystem Approach in its current form may serve as a super-ordinate ideal for further ecological optimisation of sustainable forest management in Germany. However, its wording is not tangible enough to be able to promote or assess concrete activities for securing biological diversity in forestry.

To sum up, the Ecosystem Approach should be understood as a basic guideline for the integrated management of ecosystems but not as a *modus operandi*. While it is certainly possible to successfully employ the Ecosystem Approach for introducing the concerns of the CBD into relevant areas of politics, it is not adequate as guidance for tangible projects, due to its highly theoretical organisation. Therefore, to ensure the progress of this approach, it is concrete rules for action, or for restraint from action, directed at specific ecosystems and forms of use that need to be elaborated and implemented.

The strong points of the Ecosystem Approach are to be seen primarily in the promotion of communication and discussion between the various stakeholders and actors. This approach may therefore, similar to the international approach for a National Forest Programme, serve to win the support of as many stakeholders as possible for the implementation of a broad range of sustainability objectives.

Applying the Ecosystem Approach in High-Mountain Ecosystems in Germany: Experiences with the Alpine Convention

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(This summary is based on the full report: PAULSCH, A., DZIEDZIOCH, C. & T. PLÄN (2003): Applying the Ecosystem Approach in High-Mountain Ecosystems in Germany: Experiences with the Alpine Convention. BfN-Skripten 76. Federal Agency for Nature Conservation, Bonn.)

After signing of the Convention on Biological Diversity (CBD) in 1992, sustainable use is considered as a cross-cutting issue and case-studies about the implementation within the framework of the Ecosystem Approach of the CBD are required. On the basis of those case-studies, Parties and Governments should develop ways to achieve the sustainable use of biodiversity. The study presented here, prepared within the scope of the R&D project "Developing Concepts for Sustainable Use in Selected Sub-domains of Biological Diversity" aims at analysing the current state and use of high mountain ecosystems in Germany, considered as a case-study. The study investigates the compatibility of the sustainability principles of the Ecosystem Approach with the implementation of the Convention on the Protection of the Alps (Alpine Convention).

In the high mountain range of the Alps, climatic and geological conditions create an enormous variation of different natural ecosystems, each of them hosting a well adapted community of animal and plant species. The influence of different ice ages and the dynamics of glacial and peri-glacial processes are responsible for great parts of the actual morphology and appearance of recent landscapes. Next to natural conditions, human influence significantly shaped the alpine landscape. 2,000 years ago the regular use of alpine pastures became the dominant form of agriculture and resulted in some parts in a drawback of timberline to about 300 meters under the natural limit. This practice of alpine pasture (Germ.: *Almwirtschaft*) is responsible for the typical impression that tourists bear in mind if they think of the Alps. Nowadays, winter tourism influences demographic changes: while urban centres in valleys and communities with mass tourism (especially in Bavaria and Switzerland) grow more than average, villages in remoter areas (especially in France and Italy) not only grow slower but lose inhabitants. Lots of farms were completely abandoned so that 24% of the alpine region are without human settlement today (BÄTZING 2002). In Italy, France, Slovenia and Germany the Alps are not only a kind of periphery from a geographical point of view, but in an economic sense, too. In Liechtenstein, Austria and Switzerland the Alps are in a central geographical and economical position.

The Alps consist of a mosaic of different types of ecosystems, that can be described along a vertical gradient of increasing altitude: valley bottoms with river beds, meadows, mountain forests, alpine pastures, alpine grasslands above timberline, and rocks in the summit regions.

Together with the bogs in various altitudes, the Alps host about 3,000 plant species (LAUBER & WAGNER 1998), 400 of which are endemic (GRABHERR 2001). Thus the Alps comprise about one third of the whole European flora.

The Alpine Convention is a legally binding document signed by all states participating in the mountain range of the Alps. In no other mountain range of the world a comparably binding framework for protec-

tion and sustainable use exists for the time being. The Alpine Convention covers an area of 190,912 square kilometres inhabited by 14.2 million people in 8 states, 53 regions and 5,800 communities (BUWAL 2000). The Alpine Convention consists of a frame and thematic protocols. The frame defines the aims of the convention and the formalities of regular meetings and reports. The protocols cover specific thematic issues in depth. For the time being nine protocols have been agreed to:

- the Nature Conservation and Landscape Management Protocol in 1994,
- the Mountain Agriculture Protocol in 1994,
- the Regional Planning and Sustainable Development Protocol in 1994,
- the Mountain Forest Protocol in 1996,
- the Tourism Protocol in 1998,
- the Energy Protocol in 1998,
- the Traffic Protocol in 2000,
- and the Conflict Solving Protocol in 2000.

The possibility of developing further protocols or other means regarding the topics of Population and Culture, Water Management, Air Purity, and Waste Management is mentioned in the Convention.

Although the Alpine Convention was formulated not under the impression of the Rio summit in 1992, but years before the invention of the CBD and the Ecosystem Approach, it covers in its frame convention and the protocols the aims of the CBD, especially the conservation of biological diversity and the sustainable use of its components.

Principle 1 and 2 of the Ecosystem Approach demand that management objectives should be a matter of societal choice and management should be decentralised to an appropriate level. The Alpine Convention clearly considers these demands in a sufficient way.

Principle 3 demands managers to consider the effects (actual or potential) of their activities on adjacent and other ecosystems. This demand is clearly formulated in the Alpine Convention and the protocols.

To avoid repeating mistakes and in order to give advice for best practice, monitoring systems are needed which consider effects on an ecosystem base, no matter if borders of nations or districts have to be crossed.

Principle 4 demands that economic considerations have to be integrated in management efforts and Principle 10 calls for a balance between conservation efforts and sustainable use. The meaning of both principles is fundamentally integrated in the Alpine Convention and the protocols, as it is explicitly the aim of the Alpine Convention to protect and sustainably use alpine diversity. The different protocols recommend financial support for traditional and sustainable ways of land-use, forestry and agriculture if the overall market situation renders these ways less profitable.

Principle 5 calls for the protection of ecosystem functioning. The Alpine Convention as a whole takes into account that protection of the functioning of ecosystems is of greater significance for the long-term maintenance than just protection of species. The connection of alpine national parks into a network of protected areas expresses the understanding that ecosystems have to be protected as a whole. Nevertheless, measures to strengthen or rebuild populations of single species threatened by extinction are added to the efforts.

Principle 6 demands that management has to be appropriately cautious and must respect the limits of ecosystem functioning. The Alpine Convention and its protocols agree on respecting these limits, knowing that mountain ecosystems are even more vulnerable and take longer to recover than other systems. In order to translate this principle into practice, definitions of carrying capacity and adequate monitoring programmes seem necessary.

Principle 7 demands to take measures in an appropriate temporal and spatial scale. As all states sharing in the mountain range of the Alps are members of the Alpine Convention, it can be seen as a perfect example of guaranteeing the adequate spatial scale for any measure, because the whole bundle of alpine ecosystems is part of the area which the convention covers.

Principle 8 mentions that objectives for ecosystem management should be set for the long term. As the Alpine Convention explicitly defines sustainability as main goal, the long-term approach is fundamental.

Principle 9 warns that change in ecosystems is inevitable and management has to cope with long-term changes, as e.g. climatic change. The Alpine Convention is well aware of the fact, that climatic change will have more dramatic effects in the Alps than in lowlands and urges parties to prevent soil erosion and avalanches by planting and protection of forests. Many changes that occurred in alpine systems in the last decades are man-made and hence not inevitable. The convention sees the need to stop these changes (e.g. by limiting road construction or expansion of skiing areas, by supporting traditional farmers).

Principle 11 and 12 demand to integrate all kinds of knowledge and experience from all stakeholders into management measures. The convention and the protocols call for sharing of experience between all Parties and different data networks are already implemented. Participation of non-governmental organisations was essential in formulating the convention and protocol text and still is in co-ordinating measures and spreading information.

As a result it can be observed that the Alpine Convention and the protocols consider nearly completely the demands formulated in the 12 Principles of the Ecosystem Approach of the CBD. Hence, the conceptual framework offers all possibilities to implement management measures that help to protect and sustainably use mountain biodiversity.

Progress in the implementation of the Convention was however somewhat slow in the first years after its signature by seven parties in 1991. This was partly due to controversies in the negotiation of protocols, particularly on the subject of transport. The elaboration and acceptance of an agreed version for the transport protocol in the year 2000 was one of the factors which opened the way for the ratification of protocols by the parties to the convention. The establishment of a permanent secretariat, which was finally settled in 2002, is also seen as an achievement which will facilitate further progress (cf. German thematic report on Mountain Biodiversity).

With the ratification of all nine thematic protocols by the three states Liechtenstein, Austria and Germany in 2002 all protocols came into effect in these member states in December 2002. The Alpine Convention may also serve as an example for regional cooperation in other mountain areas.

The Ecosystem Approach itself bears some implicit problems that render the implementation difficult: First of all, the wording of the principles and the guidelines is held so general that it cannot be used as a direct *modus operandi* to implementation. Here, a need of concrete rules for action (or restraint from ac-

tion) is obvious. Secondly, the Ecosystem Approach (Principle 1, societal choice, and Principle 2, decentralisation) requires more or less democratic structures. Unfortunately, these structures are not given everywhere. Third, the Ecosystem Approach calls for an appropriate balance between conservation efforts and use in managing measures (Principle 10). This principle allows wide interpretation inasmuch as the need to use ecosystems (or to change and destroy them) directly depends on the economic needs of the state hosting the ecosystem under question. The Ecosystem Approach sees humans as a part of most ecosystems and demands cautious management of ecosystems (Principle 6). Nevertheless, it must be accepted that in some ecosystems the functioning can not be guaranteed (as demanded in Principle 5), if humans try to use the system or to become part of it. Principle 8 demands to consider future benefits and to favour long-term gains instead of immediate but unsustainable uses. Unfortunately, in many cases, those who renounce from immediate benefits can not be sure to benefit from future gains in a long term perspective or can not afford to abstain from immediate use due to vital economic needs. Signatory states must seek solutions that enable people to economise in a long-term perspective.

The Ecosystem Approach should be understood as a basic guideline for the integrated management of ecosystems but not as a *modus operandi*. Due to its highly theoretical organisation, it is not adequate as guidance for concrete measures.

Nevertheless, it is certainly possible to successfully employ the approach for introducing the concerns of the CBD into relevant areas of politics.

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The Ecosystem Approach of the Convention on Biological Diversity - A German Case Study on the Lessons Learnt from the Project "Ecosystem Research Wadden Sea"

ROLF OESCHGER, BIRGIT GEORGI

Recommendations

The 12 Principles of the Ecosystem Approach had not been applied to the "Ecosystem Research Wadden Sea", which was performed from 1989-1999. Nevertheless, the research programme provides an appropriate case study for the practicality of these principles, because its integrative approach largely corresponds to the Ecosystem Approach.

Principle 1:

Intensive publicity is an insufficient basis for implementing management actions in a national park. Stakeholders whose economic interests are affected must be involved in the preparation of the management concept at an early stage (e.g. by the formation of working groups), particularly since the implementation of precise measures often requires the stakeholders' practical experience. When dealing with controversial and complex topics, it is advisable to employ independent mediators capable of formulating proposals to reconcile diverging interests. Decisions must be made in a co-operative manner, because an ecosystem can only be protected effectively with active support from the local population; decisions must be binding, thus enabling stakeholders and conservation agencies to plan for the future.

Principle 2:

Decentralised structures make it possible to involve local stakeholders in the management of the region, and they help to take the local characteristics of the ecosystem into consideration. They also serve to convey proposals to the upper management levels. Effective management of an ecosystem meshes decentralised with centralised approaches in order to tune local interests to the general interests of society. If comprehensive research projects are conducted, it is advisable to form a steering committee that will delineate the practical requisites of the management to the participating scientists and explain the rationale of the research program to stakeholders.

Principle 3:

Ecosystems are inter-linked; this necessitates a corresponding linkage between research and management activities in different ecosystems. The management of each individual ecosystem requires an understanding of the large-scale ecological, economic and social interactions between ecosystems. Therefore, sensible management is only possible with correspondingly comprehensive scientific research and international co-operation.

Principle 4:

It is necessary to explain to stakeholders and consumers that sustainable use of natural resources is only possible from an ecological perspective. To ensure sustainability, the access to the resource may be regulated by licenses subject to fees. An "eco-label" for products obtained by sustainable means can help to illuminate the ecological background and to render price increases acceptable. Tourism has special significance in ecosystems, due to its conflict potential and economic importance. A socio-economic monitoring can provide a database to diminish conflicts in managing the competition for space between tour-

ism and nature conservation. It is also advisable to internalise the resulting ecological costs ("nature tax"), since tourists are demonstrably willing to pay for nature conservation activities.

Principle 5:
The protection of the structure and functioning of an ecosystem (protection of processes) can be attained best in unexploited zones; priority for closure should be given to the areas with the greatest ecological importance. Sectoral steps, such as seasonal closures, seasonal bans on certain activities, and technical regulations can also serve to reduce manmade impacts on exploited areas. The functioning and structure of ecosystems are threatened by the exchange of species, which is increasing on a world-wide scale ("McDonaldisation"). Steps are required to abate the introduction of alien species, and a normative catalogue classifying introduced species as ecologically and/or economically acceptable, dubious, or critical, is needed. Management actions need to reflect the results of relevant research.

Principle 6:
This principle should be removed and integrated either into Principle 5 or into Operational Guideline 1.

Principle 7:
The terms "spatial and temporal scales" should be defined to discriminate between local and regional objectives. Protected areas should have adequate dimensions, correspond to natural spatial structures, and include the typical habitats of the ecosystem. Each sub-unit of the ecosystem should include unexploited sectors. Zoning concepts must protect the most sensitive areas; in some cases it might be best to accord a temporary protection status, subject to later revision. Long-term plans must be implemented in intermediate steps agreed upon with stakeholders and nature conservation groups. Many conservation objectives are attainable by small-scale, small-term, and seasonal steps, as long as the regulations are sufficiently flexible in space and time.

Principle 8:
The objectives of long-term ecosystem management can be communicated by means of "strategic visions". This includes:

a) a mobilisation strategy to publicise ecological issues and place them on the political agenda;

b) development of communication structures between interest groups;

c) finding a consensus between the groups involved, possibly including compensation of economic losses suffered by certain stakeholders.

Principle 9:
The rationale for this principle needs to be more specific with regard to avoidable and unavoidable change in ecosystems. Developments resulting from the effects of natural processes are basically acceptable. Changes due to local anthropogenic impacts (exploitation) must be minimised as far as possible. Changes due to indirect anthropogenic factors (climate change, introduction of alien species) need to be investigated before implementing appropriate management actions. Global developments such as climate change can only be checked by measures undertaken on an international scale. Changes brought about to the ecosystem by alien species are largely immune to local management measures. It is advisable to conduct a local monitoring of non-native species, as well as to conduct steps to reduce introductions (in the

case of marine ecosystems, e.g. by controls of ballast water). Belated control of introduced species appears impracticable.

Principle 10:
Ecosystem management requires legally binding agreements on protection and exploitation of natural resources. Binding regulations can serve to implement restricted access zoning concepts and closed seasons and catch limits, and to manage the sustainable exploitation of resources by means of technical specifications. One important example is the management of the mussel fishery in Schleswig-Holstein.

Voluntary catch limitations enacted for economic reasons may equally serve to protect the ecosystem, e.g. in the shrimp fishery. To reduce conflicts between recreational uses and conservation goals, recreational areas and ecologically sensitive spaces should be delimited explicitly. This can be assisted by guidance of tourist activities and by information of the public ("inducements instead of prohibitions"), as well as by local contact persons and the widespread presence of park wardens.

Principle 11 and Principle 12:
These two principles need to be more specific. The management of any ecosystem can profit from the application of informal knowledge held by stakeholders and the local population. The Wadden Sea experience shows that conflicts arise if management decisions are not understood by the population and some stakeholders feel a threat to their interests. The formation of permanent or ad hoc working groups, e.g. in the planning of protected zones, can reduce these conflicts. Management actions should be accompanied by independent investigations, and subjected to review and possible modification. The results of individual research projects should be complemented by the knowledge of stakeholders and the local population. The ecosystem's functional relationships and processes must be explained to the people who work and live in it. In a succession of many small steps, an aggressive public relations program and an application of adaptive management strategies provide a chance to protect, maintain, and to some extent restore the typical natural processes in an ecosystem.

Practical Application of the Ecosystem Approach in River Catchments - The Case of the Westcountry Rivers Trust

EDWARD MALTBY & ARLIN RICKARD[1]

Introduction

The Westcountry Rivers Trust (WRT) is an environmental charitable trust established in 1994/5 to conserve, maintain and improve the natural beauty and ecological integrity of rivers, streams and wetlands. WRT regards appropriate land management and the restoration of sympathetic flow regimes of clean water as central to the recovery of biodiversity. The Trust works both as a leader and facilitator in the South West of England to effect change through the development and delivery of catchment action.

In partnership with Royal Holloway Institute for Environmental Research (RHIER) the Trust adopted the Ecosystem Approach at an early stage in its development and works towards sustainable, community based holistic initiatives, leading to river rehabilitation and restoration at a catchment scale.

Three major catchment based projects have utilised EU Structural Funds under Objective 5B and more recently Objective 1 (Tamar 2000 SUPPORT Project, Westcountry Rivers Project (Phase I)) and most recently the Cornwall Rivers Project. These projects have involved working closely with over 1000 farmers and landowners and the production of economic-led Integrated River Basin Resource Management Plans for each farm or land unit covering in excess of 50,000 hectares.

These projects focus on gaining the active support of stakeholders and achieving a "critical mass" in each sub catchment or catchment. Plans are worked up between project advisors and the farmer or landowner and offer practical win-win solutions to achieving environmental improvement using direct and indirect economic and social gains as the primary incentives. In this way the approved appeals to the most urgent and immediate needs of the farm, whilst simultaneously contributing to the wider social and ecological objectives of catchment scale enhancement.

Examples of the outputs from the Tamar 2000 Project and the Westcountry Rivers Project:

- More than 1000 farmers & landowners visited and given advice;
- Integrated River Basin Resource Management Plans written covering 50,000 ha;
- More than100 km vulnerable riverbank fenced;
- More than 260 km main river corridor surveyed with improvement actions implemented;
- 16 wetlands restored/improved;
- More than 32 km ditches prioritised for re-vegetation /rotationally cleared;
- More than 200 sites of accelerated erosion controlled;
- 11 "Best Practice" demonstration sites developed;
- More than 80 salmonid spawning fords improved;
- More than 200 sites of habitat improvement e.g. coppicing;
- More than 75 buffer zones created.

[1] West Country Rivers Trust, Lifton, Devon, UK

The Trust's current major project, the Cornwall Rivers Project, when complete will involve a similar number of farmers again and effectively double the above outputs.

The projects are, by virtue of their European Structural Funding source, economically driven and as such are monitored for their contribution to local economies. The advice given within the projects is targeted and administered on a precautionary basis and reliant on their cost-effective nature, together with the goodwill and level of awareness raised amongst land managers for longer term sustainability.

Most of the direct economic benefit comes to the particular landowner implementing the advice within the first year. This has been estimated, on average, as £2,300 per farm/per year (a significant increase on existing incomes) and mostly results from advice regarding the optimising of farm inputs, water separation and leak reduction, improved stock health and diversification, which may include direct angling and tourism revenues. Environmental benefits include those resulting from fertiliser/nutrient reduction, reduced sedimentation due to erosion control improving fish spawning sites and increasing biodiversity from habitat restoration.

WRT and Ecosystem Approach

The Ecosystem Approach has provided an invaluable template which the Trust has applied to each project. It has served as 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.

Comments on the effectiveness and application of the Twelve Principles of the Ecosystem Approach in relation to WRT projects

1. ***Objectives are a matter of societal choice***

Although this may seem obvious it has proved to be a key point where many projects fail. WRT projects rely on being closely in touch with "grass roots" concerns and aspirations, on raising funds and on engaging stakeholders on a voluntary basis to bring about change. The Trust has no regulatory powers so a project has to carry along the people involved with it. Usually this will come down to individuals and communities identifying "enlightened self-interest". The science behind each project is subject to public scrutiny and the results highly visible. Of course, societal choice, particularly when expressed as part of the political system or democratic process, may well be "wrong" and "require re-focusing". Working at grass roots level often allows new approaches to be tested and successful working examples may then become incorporated into mainstream policy.

2. Management should be undertaken at the lowest appropriate level

This is an effective point and leads to the engagement and empowerment of the people who actually own and manage the land or resource or are contributing to their community in other ways. Projects have benefited from being non-prescriptive and not being implemented by regulatory authorities.

3. Consider the effects on adjacent/other ecosystems

The catchment approach adopted by the Rivers Trust has proven the importance of this point many times. Actions upstream inevitably influence downstream ecological and environmental conditions together with human communities.

4. Understand and manage ecosystems in an economic context

The Rivers Trust has found that the economic factors are the principle drivers leading change and the key to achieving adjustment and working towards sustainability.

5. Conservation of ecosystem structure and functioning is a priority

Two good examples of this demonstrated in WRT projects include drainage of wetlands and reduced soil infiltration rates as a result of intensive land use practices which negatively impair catchment functioning.

6. Manage within limits of functioning

Agriculture pushes this principle to the limit and breakdowns indicate a failure to respect this.

7. Use appropriate spatial and temporal scales

The Trust generally uses catchment, sub-catchment, farm and field. Temporal scales are vital in farming terms including time of year of farming operations and life cycles of species, e.g. salmon.

8. Objectives for Ecosystem Management should be long term

Land management is a long term issue - unfortunately governments tend to plan and operate short term.

9. Management must recognise that change is inevitable

The need to accept, adapt and plan for this point was brought out many times during WRT projects e.g. Foot and Mouth Disease, house price spiral, increased demand for recreation and falling farm gate prices.

10. Keep an appropriate balance between integration of conservation and use of biological diversity

This has been a more contentious issue, balance being the key word. In short most organisations and government agri-environment policy has been species or habitat driven in the region. Fragmentation and failure has occurred when wider ecological and environmental service provision has been ignored. The wider perspective embodied within the Ecosystem Approach has enabled greater balance to be achieved.

11. Consider all relevant information

Holistic is an overused word but the WRT has found pursuing both the water cycle and economics as driver and pathfinder and then considering all adverse impacts has been both practical and successful.

12. Involve all relevant sectors of society and science

Culminating in a continually evolving "Best Practice" approach with joined-up thinking converted into joined-up action.

Additions and omissions for future consideration :

- Think globally, act locally
- The need for a shared vision

Conclusions

The work of the Trust has gained the confidence of both the local communities and the statutory authorities through its non-regulatory, non-prescriptive approach. The individual landowners themselves are not generally conscious of the Ecosystem Approach concept but they are very willing participants in a process which is achieving the objectives of the CBD through its implementation. The key lies in the essential coupling of people, economics, ecology and environment within an atmosphere of enlightened self-interest. It is essential to translate scientific and technical understanding into information and actions which individuals can fully understand and which can leverage wider benefits. The approach is proving

highly successful in the Westcountry with farmers increasingly interested in participating in the projects largely through word-of-mouth contact. There is increasing interest in the model being emulated in other regions of the UK.

Background Material

Decision of the Conference of the Parties to the Convention on Biological Diversity (COP5)

Decision V/6 Ecosystem approach

The Conference of the Parties,

1. Endorses the description of the ecosystem approach and operational guidance contained in sections A and C of the annex to the present decision, recommends the application of the principles contained in section B of the annex, as reflecting the present level of common understanding, and encourages further conceptual elaboration, and practical verification;

2. Calls upon Parties, other Governments, and international organizations to apply, as appropriate, the ecosystem approach, giving consideration to the principles and guidance contained in the annex to the present decision, and to develop practical expressions of the approach for national policies and legislation and for appropriate implementation activities, with adaptation to local, national, and, as appropriate, regional conditions, in particular in the context of activities developed within the thematic areas of the Convention;

3. Invites Parties, other Governments and relevant bodies to identify case-studies and implement pilot projects, and to organize, as appropriate, regional, national and local workshops, and consultations aiming to enhance awareness, share experiences, including through the clearing-house mechanism, and strengthen regional, national and local capacities on the ecosystem approach;

4. Requests the Executive Secretary to collect, analyse and compare the case-studies referred to in paragraph 3 above, and prepare a synthesis of case-studies and lessons learned for presentation to the Subsidiary Body on Scientific, Technical and Technological Advice prior to the seventh meeting of the Conference of the Parties;

5. Requests the Subsidiary Body on Scientific, Technical and Technological Advice, at a meeting prior to the seventh meeting of the Conference of the Parties, to review the principles and guidelines of the ecosystem approach, to prepare guidelines for its implementation, on the basis of case-studies and lessons learned, and to review the incorporation of the ecosystem approach into various programmes of work of the Convention;

6. Recognizes the need for support for capacity-building to implement the ecosystem approach, and invites Parties, Governments and relevant organizations to provide technical and financial support for this purpose;

7. Encourages Parties and Governments to promote regional cooperation, for example through the establishment of joint declarations or memoranda of understanding in applying the ecosystem approach across national borders.

Annex

A. Description of the ecosystem approach

1. 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.

2. 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.

3. This focus on structure, processes, functions and interactions is consistent with the definition of "ecosystem" provided in Article 2 of the Convention on Biological Diversity:

> "'Ecosystem' means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit."

This definition does not specify any particular spatial unit or scale, in contrast to the Convention definition of "habitat". Thus, the term "ecosystem" does not, necessarily, correspond to the terms "biome" or "ecological zone", but can refer to any functioning unit at any scale. Indeed, the scale of analysis and action should be determined by the problem being addressed. It could, for example, be a grain of soil, a pond, a forest, a biome or the entire biosphere.

4. The ecosystem approach requires adaptive management to deal with the complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning. Ecosystem processes are often non-linear, and the outcome of such processes often shows time-lags. The result is discontinuities, leading to surprise and uncertainty. Management must be adaptive in order to be able to respond to such uncertainties and contain elements of "learning-by-doing" or research feedback. Measures may need to be taken even when some cause-and-effect relationships are not yet fully established scientifically.

5. 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 ap-

proaches carried out under existing national policy and legislative frameworks, but could, rather, integrate all these approaches and other methodologies to deal with complex situations. There is no single way to implement the ecosystem approach, as it depends on local, provincial, national, regional or global conditions. Indeed, there are many ways in which ecosystem approaches may be used as the framework for delivering the objectives of the Convention in practice.

B. Principles of the ecosystem approach

6. The following 12 principles are complementary and interlinked:

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

Rationale: Different sectors of society view ecosystems in terms of their own economic, cultural and societal needs. Indigenous peoples and other local communities living on the land are important stakeholders and their rights and interests should be recognized. Both cultural and biological diversity are central components of the ecosystem approach, and management should take this into account. Societal choices should be expressed as clearly as possible. Ecosystems should be managed for their intrinsic values and for the tangible or intangible benefits for humans, in a fair and equitable way.

Principle 2: **Management should be decentralized to the lowest appropriate level.**

Rationale: Decentralized systems may lead to greater efficiency, effectiveness and equity. Management should involve all stakeholders and balance local interests with the wider public interest. The closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation, and use of local knowledge.

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

Rationale: Management interventions in ecosystems often have unknown or unpredictable effects on other ecosystems; therefore, possible impacts need careful consideration and analysis. This may require new arrangements or ways of organization for institutions involved in decision-making to make, if necessary, appropriate compromises.

Principle 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:**

(a) Reduce those market distortions that adversely affect biological diversity;

(b) Align incentives to promote biodiversity conservation and sustainable use;

(c) Internalize costs and benefits in the given ecosystem to the extent feasible.

Rationale: The greatest threat to biological diversity lies in its replacement by alternative systems of land use. This often arises through market distortions, which undervalue natural systems and populations and provide perverse incentives and subsidies to favour the conversion of land to less diverse systems.
Often those who benefit from conservation do not pay the costs associated with conservation and, similarly, those who generate environmental costs (e.g. pollution) escape responsibility. Alignment of incentives allows those who control the resource to benefit and ensures that those who generate environmental costs will pay

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

Rationale: Ecosystem functioning and resilience depends on a dynamic relationship within species, among 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.

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

Rationale: In considering the likelihood or ease of attaining the management objectives, attention should be given to the environmental conditions that limit natural productivity, ecosystem structure, functioning and diversity. The limits to ecosystem functioning may be affected to different degrees by temporary, unpredictable or artificially maintained conditions and, accordingly, management should be appropriately cautious.

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

Rationale: The approach should be bounded by spatial and temporal scales that are appropriate to the objectives. Boundaries for management will be defined operationally by users, managers, scientists and indigenous and local peoples. Connectivity between areas should be promoted where necessary. The ecosystem approach is based upon the hierarchical nature of biological diversity characterized by the interaction and integration of genes, species and ecosystems.

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

Rationale: Ecosystem processes are characterized by varying temporal scales and lag-effects. This inherently conflicts with the tendency of humans to favour short-term gains and immediate benefits over future ones.

Principle 9: Management must recognize that change is inevitable.

Rationale: Ecosystems change, including species composition and population abundance. Hence, management should adapt to the changes. Apart from their inherent dynamics of change,

ecosystems are beset by a complex of uncertainties and potential "surprises" in the human, biological and environmental realms. Traditional disturbance regimes may be important for ecosystem structure and functioning, and may need to be maintained or restored. The ecosystem approach must utilize adaptive management in order to anticipate and cater for such changes and events and should be cautious in making any decision that may foreclose options, but, at the same time, consider mitigating actions to cope with long-term changes such as climate change

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

Rationale: Biological diversity is critical both for its intrinsic value and because of the key role it plays in providing the ecosystem and other services upon which we all ultimately depend. 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 continuum from strictly protected to human-made ecosystems.

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

Rationale: Information from all sources is critical to arriving at effective ecosystem management strategies. A much better knowledge of ecosystem functions and the impact of human use is desirable. All relevant information from any concerned area should be shared with all stakeholders and actors, taking into account, inter alia, any decision to be taken under Article 8(j) of the Convention on Biological Diversity. Assumptions behind proposed management decisions should be made explicit and checked against available knowledge and views of stakeholders.

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

Rationale: Most problems of biological-diversity management are complex, with many interactions, side-effects and implications, and therefore should involve the necessary expertise and stakeholders at the local, national, regional and international level, as appropriate.

C. Operational guidance for application of the ecosystem approach

7. In applying the 12 principles of the ecosystem approach, the following five points are proposed as operational guidance.

1. Focus on the functional relationships and processes within ecosystems

8. The many components of biodiversity control the stores and flows of energy, water and nutrients within ecosystems, and provide resistance to major perturbations. A much better knowledge of ecosystem functions and structure, and the roles of the components of biological diversity in ecosystems, is required, especially to understand: (i) ecosystem resilience and the effects of biodiversity loss (species and genetic levels) and habitat fragmentation; (ii) underlying causes of biodiversity loss; and (iii) determinants of local biological diversity in management decisions. Functional biodiversity in ecosystems provides many goods and services of economic and social importance. While there is a need to accelerate efforts to gain new knowledge about functional biodiversity, ecosystem management has to be carried out even in the absence of such knowledge. The ecosystem approach can facilitate practical management by ecosystem managers (whether local communities or national policy makers).

2. Enhance benefit-sharing

9. Benefits that flow from the array of functions provided by biological diversity at the ecosystem level provide the basis of human environmental security and sustainability. The ecosystem approach seeks that the benefits derived from these functions are maintained or restored. In particular, these functions should benefit the stakeholders responsible for their production and management. This requires, inter alia: capacity-building, especially at the level of local communities managing biological diversity in ecosystems; the proper valuation of ecosystem goods and services; the removal of perverse incentives that devalue ecosystem goods and services; and, consistent with the provisions of the Convention on Biological Diversity, where appropriate, their replacement with local incentives for good management practices.

3. Use adaptive management practices

10. Ecosystem processes and functions are complex and variable. Their level of uncertainty is increased by the interaction with social constructs, which need to be better understood. Therefore, ecosystem management must involve a learning process, which helps to adapt methodologies and practices to the ways in which these systems are being managed and monitored. Implementation programmes should be designed to adjust to the unexpected, rather than to act on the basis of a belief in certainties. Ecosystem management needs to recognize the diversity of social and cultural factors affecting natural-resource use. Similarly, there is a need for flexibility in policy-making and implementation. Long-term, inflexible decisions are likely to be inadequate or even destructive. Ecosystem management should be envisaged as a long-term experiment that builds on its results as it progresses. This "learning-by-doing" will also serve as an important source of information to gain knowledge of how best to monitor the results of management and evaluate whether established goals are being attained. In this respect, it would be desirable to establish or strengthen capacities of Parties for monitoring.

4. Carry out management actions at the scale appropriate for the issue being addressed, with decentralization to lowest level, as appropriate

11. As noted in section A above, an ecosystem is a functioning unit that can operate at any scale, depending upon the problem or issue being addressed. This understanding should define the appropriate

level for management decisions and actions. Often, this approach will imply decentralization to the level of local communities. Effective decentralization requires proper empowerment, which implies that the stakeholder both has the opportunity to assume responsibility and the capacity to carry out the appropriate action, and needs to be supported by enabling policy and legislative frameworks. Where common property resources are involved, the most appropriate scale for management decisions and actions would necessarily be large enough to encompass the effects of practices by all the relevant stakeholders. Appropriate institutions would be required for such decision-making and, where necessary, for conflict resolution. Some problems and issues may require action at still higher levels, through, for example, transboundary cooperation, or even cooperation at global levels.

5. Ensure intersectoral cooperation

12. As the primary framework of action to be taken under the Convention, the ecosystem approach should be fully taken into account in developing and reviewing national biodiversity strategies and action plans. There is also a need to integrate the ecosystem approach into agriculture, fisheries, forestry and other production systems that have an effect on biodiversity. Management of natural resources, according to the ecosystem approach, calls for increased intersectoral communication and cooperation at a range of levels (government ministries, management agencies, etc.). This might be promoted through, for example, the formation of inter-ministerial bodies within the Government or the creation of networks for sharing information and experience.

Decision of the Conference of the Parties to the Convention on Biological Diversity (COP5)

Decision VI/12 Ecosystem approach

The Conference of the Parties,

Recalling its decisions IV/1 B and V/6 on ecosystem approach,

Noting that, in many countries, implementation of the ecosystem approach has been slow due to financial constraints,

Recognizing the necessity to apply the ecosystem approach in national policies and legislation, and to integrate the approach in thematic and cross-sectoral programmes of the Convention at the local, national and regional level, and with a view to facilitating the integration of the approach, as appropriate, in the work of other forums and relevant international agreements,

Underlining the importance of developing regional guidelines to apply the ecosystem approach, while recognizing efforts made in this direction,

1. Urges Parties, other Governments and relevant organizations that have not done so to submit case-studies and lessons learned on the development and implementation of the ecosystem approach at the national and regional levels;

2. Requests the Executive Secretary:

(a) To continue the collection, compilation and dissemination of case-studies and lessons learned and to prepare a report for consideration by the Subsidiary Body on Scientific, Technical and Technological Advice at a meeting prior to the seventh meeting of the Conference of the Parties;

(b) Within the availability of resources and in collaboration with relevant organizations and bodies, in particular the United Nations Forum of Forests, to convene a meeting of experts to compare the ecosystem approach with sustainable forest management, and develop proposals for their integration;

(c) To develop proposals for the refinement of the principles and operational guidance of the ecosystem approach on the basis of case-studies and lessons learned, including indicators and strategies for the integration of the ecosystem approach into the programmes of work of the Convention, taking into account regional differences;

3. Invites Parties, other Governments and organizations to provide technical and financial resources for the organization of regional workshops to promote the exchange of experiences and regional, national and local capacity-building, and to enhance awareness.

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ECOSYSTEM APPROACH: FURTHER CONCEPTUAL ELABORATION

1.1 Annex II

ELABORATION OF GUIDANCE AND ACTIONS FOR EACH OF THE MALAWI PRINCIPLES BY THE LIAISON GROUP

The liaison group suggested that the twelve principles developed by the Malawi Workshop on the Ecosystem Approach, held in Lilongwe in January 1998 (UNEP/CBD/COP/4/Inf.9) should form the core of the ecosystem approach, while relevant findings of other initiatives should also be taken into account, as appropriate. The liaison group developed proposed actions aimed at implementing each principle and other guidance on such an approach.

The liaison group proposed that, although some principles might have precedence over others, they need to be read as a whole and in conjunction with each other, as they are all complementary and interlinked. Together they characterize the ecosystem approach. The liaison group was aware further of the variation in country circumstances which may impede implementation and necessitate specific operational requirements.

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

Guidance notes

- State or local government should decide at which level and by whom (villages, non-governmental organizations, lobbies, church, etc.) the identification of the elements contained in the actions below should take place.
- Develop framework laws and policies to create an enabling environment for society to implement choices.

Actions

- Identify the boundaries for application of the ecosystem approach through iterative processes which might include the following:
  (i) Identify different sectors of society relevant to process;
  (ii) Identify objectives of different sectors;
  (iii) Identify problems as pointed out by sectors;
  (iv) Identify strong and weak linkages;
  (v) Identify stakeholders and actors and differentiate them according to practical actions;
  (vi) Identify how socio-economic needs rely on ecosystem processes**.**
- Define and use effective and transparent mechanisms, and devote the necessary time, financial resources and institutional capacity, to identify, inform, consult and involve all elements of society in choosing management objectives, according to local conditions, on: how to find the best balance between the three objectives of the Convention. The balance point will vary according to local circumstances. The process will be promoted through the implementation of communications and capacity-building programmes at all levels and scales.
- Promote broad understanding of the connection between people and the environment and how each influences the other.
- In the context of ecological education and research, emphasize people as integral components of an ecosystem.
- Establish conflict resolution mechanisms.
- Promote information-sharing, as stipulated in principles 11 and 12.
- Take account of risk assessment and cost-benefit analysis.
- Build capacity (human resources and/or financial) at various levels within the civil society, non-governmental organizations and/or local communities.
- Identify the necessary resources; if resources are lacking, develop proposals for funding from, e.g., the Global Environment Facility.

Principle 2: **Management should be decentralized to the lowest appropriate level**.

Guidance notes

- Identify those specific areas and/or bioregions, e.g. specific watersheds, coastal zones etc., that need priority action.
- In identifying areas for management, priority should be given to ecological parameters using scientific means, but considering also social and economic issues that can help to define issue areas in which to apply the ecosystem approach (examples are procedures of state Governments (e.g. New South Wales in Australia and devolved authority for wildlife management in Zimbabwe).
- Use local knowledge to the greatest extent possible and as appropriate.

Actions

- Define appropriate level based on results/actions of principle 1.

- Develop appropriate legal framework and policy to delegate and receive authority, if lacking.
- Adopt new institutional arrangements that recognize the preconditions of the ecosystem approach.
- Establish a clear accountability framework/structure/procedure.
- Develop appropriate measures to ensure implementation.
- Central government, within its legislative framework and policy, to delegate authority and pass responsibility to the lowest and most appropriate level with necessary means and resources.
- Establish or improve coordination mechanisms within and between governments at implementation level.
- Create an enabling environment for the development of stakeholder committees to develop management strategies for ecosystems or bioregions at the appropriate level and with appropriate technical support.
- Develop a planning framework commonly agreed by all stakeholders.
- Mandate committees of stakeholders to develop management plans with technical advice from groups of people with relevant expertise.
- Identify and provide necessary resources at the appropriate level.
- Train personnel and promote learning by action/in service.

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

Guidance notes

- Institutions can be village councils, provincial councils, networks, intergovernmental organizations, non-governmental organizations, depending on the scale of the issues to be resolved.
- All people involved in management activities can be considered ecosystem managers.
- If impacts are going to affect ecosystems out of the management unit, a higher hierarchical level should be included in the decision making process.
- Use appropriate instruments described in the Convention to consult and agree with others on management objectives for a given ecosystem thematic area or cross-cutting issue.
- If actions in a given area are impacting others, the decisions should be reconsidered - flexibility is a key approach.
- Consider all relevant information, according to principles 11 and 12.
- Use principle 8 to define time-scales for impacts and take into account different time-scales affecting ecosystems.

Actions

- Build institutional mechanisms for decision-making that lead to appropriate compromises and trade-offs, taking into account different valuation systems.
- In order to ensure fairness and equitability in the trade-off process, governments or other institutions can take a mediatory role.
- Differentiate priorities among ecosystem managers.

- Develop protocols or mechanisms by which the different institutions involved can solve conflicts.
- Where impacts occur in adjacent or other ecosystems, establish a mechanism to bring together the relevant ecosystem management mechanisms with technical advice from groups with relevant expertise and mediation services.
- Build constituencies, enabling local communities to analyse decisions and generate modification of decisions.
- Implement capacity-building programmes at the ecosystem level.
- Carry out environmental impact assessment, in accordance with Article 14 of the Convention.
- In accordance with Article 7 of the Convention, implement regional and/or national monitoring systems to measure the effects of management measures in adjacent and other ecosystems.
- Analyse linkages and impacts of activities like: inland waters versus coastal fisheries; mountains and agro-ecosystems versus inland waters; forestry and desertification.
- Develop specific measures to deal with transboundary issues in the case of shared ecosystems between countries.
- Develop and apply legislative tools.

Principle 4: **Recognizing potential gains from management there is a need to understand the ecosystem in an economic context**. Any ecosystem management programme should:

(a) Reduce those market distortions that adversely affect biological diversity;

(b) Align incentives to promote biodiversity conservation and sustainable use;

(c) Internalize costs and benefits in the given ecosystem to the extent feasible.

Guidance notes

- Economics at all levels must be seen in a broad sense to include not only monetary and marketable values but also resource and ecosystem-service values.
- Build institutional mechanisms for decision-making that lead to appropriate compromises and trade-offs.
- In order to ensure fairness and equitability in the trade-off process, government or other institutions can take a mediatory role.
- Consider international funding mechanisms and trends.
- Influence international and intergovernmental organizations that may have conflicting priorities so that application of principle 4 will be promoted.

Actions

- Develop mechanisms for appropriate valuation of ecosystem goods and services and reflect it in National Accounts.
- Review, revise and implement policy, legal and economic mechanisms to ensure they support an ecosystem approach at national and regional levels.
- Identify and resolve conflicting cross-sectoral and transboundary policies, legal and economic mechanisms.

- Carry out technical analyses of current market distortions, incentives and ecosystem costs/benefits.
- Adjust perverse incentives/subsidies and market distortions in such a way that they are no longer detrimental to biological diversity, and develop legal and economic instruments which recognize liability for loss of or damage to biological diversity.
- Create an enabling environment for activities 4 (a), (b) and (c).
- Parties and international funding agencies should promote an ecosystem approach to management in development programmes.
- Incorporate into policy-making mechanisms for the economic valuation of biological resources/biodiversity and ecological processes/services.

Principle 5: **A key feature of the ecosystem approach includes conservation of ecosystem structure and functioning**.

Guidance notes

- Principles 6 and 8 are strongly related to principle 5, so actions here will impinge on principles 6 and 8.
- Traditional conservation approaches are complementary to the ecosystem approach and should not be excluded.
- Knowledge sharing is important (see principle 11).

Actions

- In planning conservation or development programmes or projects, ensure that, using the ecosystem approach, the structure and functioning of ecosystems is maintained and/or enhanced.
- Ensure that pursuant to Article 7, research into ecosystem structure and functioning, as well as how ecosystems respond to management will be strengthened and intensified.
- Ensure capacity-building at the appropriate level for the study of structure and ecosystem functioning.
- Improve knowledge on ecosystem functioning, structure and dynamics (i.e. response to something), including through biodiversity assessments and inventories, collection of baseline information, and biodiversity monitoring by means of indicators and criteria;
- Examine how traditional conservation approaches can be optimized as part of the ecosystem approach;
- Develop mechanisms to further enhance validation of information (see also principle 11).
- Translate complicated concepts, jargon and knowledge into understandable and practical guidance.
- Formulate recommendations and guidelines for management options and restoring functions, and for scenario development, so that ecosystem managers can make informed decisions.
- Mobilize financial resources, develop the necessary capacities and collect baseline information.

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

Guidance notes

- Limits to functions will depend on societal preferences, as already illustrated by principle 1.
- One should not rely on single-species models to set maximum sustainable yield or other limits.

Actions

- Given the level of uncertainties, apply the precautionary principle. To achieve this it is necessary for activities to be phased, monitored, and only allowed to proceed if effects are negligible or benign.
- Undertake environmental assessments.
- Advisors need to be properly trained in the use of non-linear thinking, and integrated technical approaches, and be warned about extrapolation of trends that in reality show thresholds, changes and other non-linear behaviour that characterize the complicated nature of ecosystems.
- Strengthen advisory institutes so that this type of knowledge on ecosystem structure and functioning incorporated into advice on policies which address the underlying causes of biodiversity loss. (Expertise may come from professional communities not normally thought of in the context of ecosystem management, e.g. weather information, insurance companies, actuaries).

Principle 7: **The ecosystem approach should be undertaken at the appropriate scales**.

Guidance notes

- Scale is determined by statement of problem and a shared vision of the outcome.
- The boundaries of the management unit should be defined according to the specific management objectives/needs.
- Consider the most appropriate time frame (short-term versus long-term goals) and spatial scales (in relation to local versus provincial versus national versus global goals).
- Linkage to principles 4 and 6.

Actions

- Conflict-resolution analysis at the appropriate scale.
- Consider suitable framework for implementation of the ecosystem approach.
- Develop pilot projects and case-studies and distil lessons learned.
- Other actions as under principle 1.

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

Guidance notes

- Objectives for ecosystem management, including monitoring and research, should be set in the context of ecosystem and species recovery and renewal periods.

Actions

- Governments should take a mediatory role regarding trade-offs between short-term and long-term costs/benefits.
- While taking into account immediate and critical needs (e.g. hunger, poverty, shelter), Governments should develop long-term planning and long-term goals independently from annual (short-term) funding and other natural cycles, so that ecosystem managers can take into account in their decision-making trade-offs between short-term benefits and long-term goals.
- Establish monitoring mechanisms to detect long-term change, e.g., success or failure.
- The Convention Secretariat should facilitate exchange of experiences among Governments, for example through the clearing-house mechanism.

Principle 9: **Management must recognize that change is inevitable**.

Guidance notes

- Change can be generated internally within the system, as well as externally.
- Management should include restoration of degraded ecosystems.
- New emerging opportunities should be integrated in increasing awareness at different levels of society.

Actions

- Appropriate management models as well as reliable contingency plans are of particular importance for dealing with uncertainty and change.
- Periodic monitoring of socio-economic, ecological and environmental processes, inter alia, to detect changes in ecosystems at an early stage. Such monitoring should be based upon reference points (targets, limits, thresholds) and take into account the limits of ecosystem functioning.
- On the basis of such monitoring, rapid response mechanisms to ecosystem change should be developed.
- Adaptive management could assist in preventing degradation or loss of habitats by taking early actions in response to the changes in ecosystems. The use of such management in applying the ecosystem approach at every level should be encouraged and developed, in particular within an appropriate framework, and include feedback mechanisms.
- Baseline information on the effect of change on ecosystem functioning and research on ecosystem dynamics should be developed and supported.

Principle 10: **The ecosystem approach should seek the appropriate balance between conservation and use of biological diversity**.

Guidance notes

- The term "use" should be understood as including non-extractive components, such as spiritual, cultural, tourism, genetic treasure-house and research uses.

Actions

- Balance should reflect long- and short-term, direct and indirect benefits of conservation and sustainable use of biological diversity.
- Policy, legal, institutional and economic mechanisms should be reviewed, revised and implemented to ensure that an ecosystem approach is integrated at national and regional levels.
- Cross-sectoral and transboundary policies, as well as legal and economic mechanisms that could create conflict should be identified and resolved as far as possible.
- Research in integrated land-use planning and formulation of best management practices to better understand the application of the full range of measures vis-à-vis ecosystem production, biological diversity conservation and equitable benefit-sharing should be advanced.
- Knowledge regarding the emergence of possible general features regarding various and multiple use of ecosystem in a spatial context (for example, land planning, biosphere reserve concept) should be developed.

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

Actions

- Appropriate mechanisms should be developed in order to gather information from different knowledge and information systems in view of, inter alia, facilitating their utilization by decision-makers as well as by all relevant stakeholders and actors.
- Relevant knowledge from proper disciplines and expertise should be disseminated and make easily available for all interested people through appropriate mechanisms that take into account, when appropriate, user-friendly ways and relevant media.
- Education, training and awareness at all levels based on, inter alia, appropriate teaching mechanisms, should be promoted in particular in view of better using relevant and correct information on the ecosystem approach and when appropriate, in relation to people's own experience and conditions.
- Knowledge and participation of indigenous and local communities are of paramount importance. Therefore, institutional arrangements that will allow collecting [all] indigenous and local communities information should be promoted.
- Demonstration projects should be promoted, in particular, those that could contribute to change damaging human behaviour.

- Relevant cases-studies, in particular those that demonstrate the economic, social as well as ecological benefits from, or that identify constraints in, the implementation of the ecosystem approach should be developed and made available for use by others.
- Adapt the clearing-house mechanism so that it could be used for this purpose.

Principle 12: **The ecosystem approach should involve all relevant sectors of society and scientific discipline**.

Guidance notes

- In implementing principle 12, all the other principles have to be taken into account.

Actions

- Effective participation of all stakeholders and actors in decision making and as appropriate in implementation of ecosystem management and, in particular, in national consultation processes, should be developed and ensured.

Using the Ecosystem Approach: Key Questions and Issues - A summary of lessons and recommendations from three regional workshops[1]

presented by EDWARD MALTBY

The workshops, held in S. America, Africa and SE Asia, were designed in response to decision V/6 (taken in May 2000) of the fifth Conference of the Parties (COP-5) of the Convention on Biological Diversity. The workshops aimed to catalyse and facilitate the practical implementation of the Ecosystem Approach under the CBD.

Objectives

The workshops aimed to use **case studies** and discussions with **key stakeholders** in the region to provide **lessons for the practical implementation** of the Ecosystem Approach. Specifically, the workshops aimed to:

- **Build awareness** in the region by using case studies to illustrate aspects of the Ecosystem Approach under the CBD
- Examine perceived **constraints** in using the approach with a variety of stakeholders
- Share experiences from the region of **opportunities** for taking action under the Ecosystem Approach
- Identify some key **priority measures** that are needed to facilitate implementation of the Ecosystem Approach in the region
- Identify **capacity building** priorities (human and technical)
- Suggest when **other approaches** are more appropriate.

A. Awareness and understanding

- ***Were the case studies appropriate for raising awareness of the Ecosystem Approach?***
- ***What is new about the Ecosystem Approach?***

- *The **Ecosystem Approach is** a unifying tool that is an appropriate **basis for mainstreaming the CBD** into policy making.*
- *Mainstreaming the Ecosystem Approach requires the **engagement of professionals from other sectors** of the economy and society (including industry, agriculture, finance) who are likely to be less aware of and more hostile to the Ecosystem Approach than conservation and natural resource development practitioners.*
- *Highly **targeted workshops** can help to improve the understanding of what the Ecosystem Approach is and how its application can ensure the delivery all three CBD objectives among non-natural resource and conservation professionals.*

[1] This text is a selected abstract from the Global Synthesis Report (R.D. Smith and E. Maltby, Editors) available in full at http://www1.rhbnc.ac.uk/rhier/iucn.htm (2001)

- ***National and thematic workshops*** *may be the most appropriate way for Parties and others to develop specific, practical guidelines.*
- *Interested organisations and Parties are encouraged to help build understanding and awareness of the Ecosystem Approach by drawing attention to* ***the definition and description of the Ecosystem Approach in Decision V/6*** *in their related work.*
- *The Ecosystem Approach is* ***a framework for action based on holistic decision making****, not a set of guidelines for managing various ecosystems.*

– **Cooperation requires improved communication to increase awareness and understanding**

User friendly materials can help communicate:
- *The Ecosystem Approach,*
- *scientific knowledge and*
- *indigenous knowledge*

more widely, thereby helping all relevant sectors to be involved with delivering the Ecosystem Approach ***(Principle 12)****.*

– ***Building ecological awareness and understanding among farmers and other producers is key to the success of the Ecosystem Approach***

- ***Farming*** *and other productive systems are often most efficient long-term when undertaken using* ***ecological principles****.*
- *Improved farmer understanding of ecological thinking is best achieved through community efforts in which* ***farmers learn from the practice of others****.*

– ***Other than conservation, what other sectors need to be made aware of the Ecosystem Approach?***

- *Efforts are needed to translate Decision V/6 into* ***a short, easy to communicate message*** *to build awareness and understanding among environmental specialists and the general public alike.*
- ***Regional centres*** *may be appropriate for training and awareness building.*

– ***Do the case studies illustrate the principles, operational guidelines, CBD thematic areas and cross-cutting issues?***

- *Principles and Operational Guidelines that each case study illustrates most clearly were identified.*

B. Interpreting decision V/6

– ***Does decision V/6 provide sufficient guidance on implementing the Ecosystem Approach?***

- *Is it necessary, in every scenario, for all principles and operational guidelines to be applied for an activity to be described as Ecosystem Approach?*

– ***Which Principles and Operational Guidelines had the greatest and least relevance?***

- ***Principles 1, 2 and 12*** *had the greatest overall relevance to the case studies.*
- ***Principles 3, 6, 7 and 9*** *were considered to have least relevance to the case studies overall. This suggests that relatively few case studies applied ecosystem science (**Principles 3, 6 and 9)** or explicitly considered how to identify the most appropriate scale for using the Ecosystem Approach to tackle particular problems (**Principle 7**).*
- *The workshops considered that the **Operational Guidelines were not sufficient** and that it would be appropriate for Parties and others to develop specific, problem-related guidance on the Ecosystem Approach.*
- *The case studies illustrate the importance under the Ecosystem Approach of **decentralised and participatory** approaches to decision making that seek a broadly agreed **societal choice**.*
- *Greater efforts are needed to integrate **ecosystem science** into on-the-ground Ecosystem Approach activities.*
- *A greater effort is often needed to define the **most appropriate spatial and temporal scales** for using the Ecosystem Approach in particular circumstances.*
- ***Financial and other mechanisms** are needed that will allow the **economic and wider value** of ecosystem functioning to human well-being to be realised in decision-making processes.*

C. Participation and capacity building needs

Key points

– ***Achieving effective participation is a significant challenge***
– ***Capacity building is a priority***
– ***Stakeholder participation is essential if societal choice is to be recognised***
– ***Realising societal choice requires reconciliation of conflicting views***
– ***It is vital to engage all stakeholders in landscape-scale decision making***

D. Scale

Key points

– ***There is no "lowest appropriate level"***

– **Defining the scale: top down or bottom up?**
– ***Obstacles to decentralised management***
– ***Interconnections between ecosystems are often not considered***
– ***How appropriate is the national scale to implementation?***
– ***The Ecosystem Approach is relevant to international trade***
– ***Timescales typically differ between stakeholders***
– ***Scientific uncertainty is one reason why adaptive management is needed***

E . Benefit sharing and incentives

– ***Benefit sharing - what is new under the Ecosystem Approach?***

- *There are potentially many* ***innovative approaches to benefit sharing*** *under the Ecosystem Approach and further guidance on this would be appropriate.*
- ***Benefit sharing need not involve financial payments*** *as management based on ecological principles can often prove cost effective.*
- ***Non-prescriptive solutions*** *may carry the greatest chance of successful implementation of the Ecosystem Approach.*

Key points

– ***Sharing costs and benefits globally is a major challenge***
– ***Meeting wider socio-economic needs can be essential before people will become engaged in activities in support of the CBD***
– ***Lack of evaluation and assessment of ecosystem services***
– ***Removal of perverse incentives is a priority***

F. Information management for decision making

Key points

– ***Existing scientific knowledge needs to be mobilised***
– ***Integrating local and scientific knowledge to create decision support tools can help non-specialists interpret and visualise data***

G. Structural and intersectoral issues

Key points

– ***Is implementation of the Ecosystem Approach possible with existing decision-making structures?***
– ***More active implementation of international conventions can catalyse application of the Ecosystem Approach***
– ***Role of CBD focal points***

H. The Ecosystem Approach and other conservation strategies

Key point

- ***Should the Ecosystem Approach be used instead of or alongside other approaches to conservation?***

WHAT HAVE WE LEARNT FROM THE PATHFINDER WORKSHOPS?

(a) Overview

- There is still inconsistency in understanding of the meaning of the term "Ecosystem Approach".
- The overall concept the Ecosystem Approach represents is already embraced by many practitioners and organisations and applied to a varied extent in different conservation, development and natural resource management contexts.
- Case studies provide a range of valuable experience for others embarking on implementation of the Ecosystem Approach.

- It is essential to recognise the importance of regional context, different societal priorities and cultural perspectives in application of the Ecosystem Approach.
- Transboundary biodiversity problems can be addressed using the Ecosystem Approach and regional political structures.

(b) Gaps in knowledge and understanding

- There are deficiencies in the technical understanding of ecosystem functioning.
- There are inadequate exchanges of relevant information between and among institutes and responsible agencies.
- Capacity is commonly insufficient to implement the Ecosystem Approach as a key cross-cutting framework.
- There is limited understanding of the Ecosystem Approach at effective decision making levels.

(c) The main constraints to effective implementation

- Ineffective stakeholder participation in planning and management.
- Inconsistent use of terminology and definitions.
- The lack of capacity for decentralised and integrated management.
- Insufficient institutional co-operation and capacity.
- Lack of dedicated organisations able to support delivery of the Ecosystem Approach.
- Overriding influence of perverse incentives and conflicting political priorities.

HOW CAN THE ECOSYSTEM APPROACH HELP FURTHER IN THE IMPLEMENTATION OF THE CBD?

- The Ecosystem Approach is a unifying tool that is appropriate for mainstreaming the CBD into the wider policy agenda.
- It codifies within the Convention what many Parties, institutions and agencies are already attempting to do with respect to project implementation and related policy obligations at national, supranational and international levels.
- The Ecosystem Approach can be used to break down the sectoral divisions between ecology and economics, and address biodiversity conservation as an intricately interrelated aspect of human welfare.
- The Ecosystem Approach can help policy makers appreciate the importance of the vital ecosystem services that depend on biodiversity.
- Successful implementation of the Ecosystem Approach has the potential to support the vision of civil society and can assist considerably the political process in realising this.
- The raised profile of benefit sharing implicit in operationalisation of the Ecosystem Approach can assist in resolving the conflicts between different sectoral groups.
- Relevance to other conventions such as Ramsar and CCD can reinforce the delivery mechanisms of all such treaties.
- The Ecosystem Approach underlines the importance of inter- and intra-sectoral co-operation which is essential for the better management of natural resources.

- Recognition of the need to combine both bottom-up and top-down mechanisms for operationalisation of the Ecosystem Approach can help facilitate achievement of the CBD objectives.
- Application of the Ecosystem Approach can help secure the future of protected areas while extending biodiversity management over the wider landscape.

WHAT SHOULD BE THE NEXT STEPS?

- Facilitate access to the regional case studies and workshop reports so that Parties can share experience and knowledge.
- Promote the short definition of the Ecosystem Approach and its relevance to implementation of wide-ranging environmental legislation and policy instruments in addition to the CBD.
- Encourage Parties to develop new pilot projects and case studies that are based from the outset on the Ecosystem Approach and make available the operational experiences (both positive and negative) using, where possible, the CHM and other appropriate avenues.
- Examine ways in which the Ecosystem Approach can be more effectively integrated within conservation strategies at national and other scales through, for example, NBSAPs.
- Distil problem-specific guidance for the application of the principles of the Ecosystem Approach.
- Use the requirements of the Ecosystem Approach to identify the particular and specific technical and other capacity building needs the Parties need to support implementation.
- Determine the ways in which professional expertise from the non-conservation community including industry, trade and finance sectors can be more fully embraced into operationalisation of the Ecosystem Approach.

An Ecosystem Approach under the CBD, from concept to action: ***a project under the auspices of IUCN-CEM/UNESCO/CBD Secretariat made possible by the kind financial support of the EU, UK Government, UNESCO-MAB, WWF-International, Bureau of the Convention on Wetlands (Ramsar, 1971), the Swiss Agency for Development and Co-operation and Royal Holloway, University of London., and implemented by RHIER.***

Annex 1: Workshop Programme

Wednesday, October 9th, 2002

Arrival of the participants

18.30 Dinner

20.00 H. KNAPP (BfN)
Welcome of the participants

H. KORN (BfN)
Introduction to the Workshop

Introduction of the participants

J. STADLER (BfN)
The Ecosystem approach of the CBD - brief historical background

Thursday, October 10th, 2002

8.00 Breakfast

9.00 V. HARTJE (TU BERLIN)
The international debate on the Ecosystem approach

A. KLAPHAKE (TU BERLIN)
Consideration of the ecosystem approach in Germany

1.1.1 Coffee / Tea break

A. PAULSCH (IBN)

Applying the Ecosystem Approach in High-Mountain Ecosystems in Germany: Experiences with the Alpine Convention

12.30 Lunch

13.30 Guided tour in the Nature Reserve of the Isle of Vilm

15.00 Coffee / Tea break

15.30 5 min. Statements by participants:
E. Maltby (UK)

L. Ntahuga (ABO Burundi)

K. Njobe (South Africa)

J. Poulsen (CGIAR Indonesia)

B. Georgi (UBA Germany)

M. Baudoin (Bolivia)

A. Shestakov (WWF Russia)

A. Paulsch (IBN)

J. Stadler (BfN)

K. Jax (UfZ-Leipzig)

C. Epple (BfN)

18.30 Reception at the invitation of the Federal Agency for Nature Conservation

Friday, October 11th, 2002

8.00 Breakfast

9.00 Working groups

1.1.2 Coffee / Tea break

Working groups (continued)

12.30 Lunch

13.30 Finalisation of the workshop report

1.1.2.1 Coffee / Tea break

Final Plenary discussion

18.30 Dinner

Annex 2: List of Participants

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