UNEP

CBD

CONVENTION ON BIOLOGICAL DIVERSITY

Distr.
GENERAL

UNEP/CBD/EM-EA/1/2
3 July 2003

ORIGINAL: ENGLISH

EXPERT MEETING ON THE ECOSYSTEM APPROACH
Montreal 7-11 July 2003
Item 3 of the provisional agenda*

LESSONS LEARNED FROM CASE-STUDIES

Note by the Executive Secretary

I. INTRODUCTION

1. In its decision V/6, paragraph 4, the Conference of the Parties (COP) requested the Executive Secretary to collect, analyze, and compare identified case-studies and lessons learned on the ecosystem approach, and to prepare a synthesis for presentation to the Subsidiary Body on Scientific, Technical, and Technological Advice (SBSTTA) prior to the seventh meeting of the COP. Furthermore, in its decision VI/12, COP requested the Executive Secretary to continue the collection, compilation and dissemination of case-studies and lessons learned (paragraph 2a). A critical review of case-studies will provide an overview of how the ecosystem approach has been implemented worldwide, as well as the lessons learned from its application. Such practical experiences provide the basis for later consideration of the principles and operational guidelines of the ecosystem approach.

2. In response to the request from the Conference of the Parties, three regional 'Pathfinder Workshops' were held in late 2000 for Southern Africa, South America and Southeast Asia, facilitated by Professor Edward Maltby of the Royal Holloway Institute for Environmental Research, University of London. The main objective of the Pathfinder Workshops was to compile and analyze case-studies of the ecosystem approach. The process produced three regional workshop reports and one global synthesis report (Smith and Maltby, 2001). The global synthesis report is available to this meeting as an information document.

3. In addition, the Center for International Forestry Research (CIFOR), as part of their review of the ecosystem approach, has prepared the following two case-studies. The case-studies were prepared according to the official CBD guidelines. While both applications of the ecosystem approach are retrospective, and thus incomplete, they do provide a practical foundation for assessing implementation of the ecosystem approach and its principles.

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II. CASE-STUDY 1: MALINAU, INDONESIA

A. Background

4. This case-study is being conducted in the Malinau catchment in Malinau District, East Kalimantan, an area of approximately 250 000 hectares. The area is covered mostly with primary and secondary forests, and is of considerable global value for biodiversity, being part of one of the largest contiguous blocks of forest left in the tropics. Most of the area has been allocated to logging concessions, though extremely rugged terrain means that much of the area is currently inaccessible. There are areas of shifting agriculture and some coal mining. The area has undergone rapid change in the last five years through the opening up of roads, expansion of mining, decentralisation (shifting the balance of power and introducing many new actors in the logging and governance arena), and high in-migration as a result of new economic opportunities.

5. When the research was initiated in the middle to late 1990s, the key perceived problems were related to industrial logging by large state companies. Damage to the local environment through this activity, concerns about the sustainability of timber supplies from the permanent forest estate, and the lack of benefits reaching local inhabitants guided much of the early research. With the implementation of Indonesia's decentralization reforms in 2000, small-scale logging became rampant throughout Indonesia, especially in Malinau (as the district is close to markets in Malaysia). The result has been extraordinarily high levels of intense, unsustainable timber extraction and conflict. Lack of benefits to local inhabitants remains a key problem. Unsustainable logging has shifted to a new order of magnitude, and lack of capacity and financial resources at the district level have limited any serious attempt to manage natural resources.

6. Local values of biodiversity are often different from those held by the global community, but many species and habitats valued by local people have global significance. Local communities have complex relationships with their environment that need to be understood and taken into account in decision and policy making.

B. Objectives

7. Currently, one of the key objectives is to improve district co-ordination of forest management in the Malinau catchment through improved stakeholder participation, conflict management, development of land-use plans, and monitoring. Another objective is to seek to increase local people's access to and control over forest benefits through economic development initiatives that contribute to district incomes and participation in district decision-making.

C. Approach

8. The research and development focuses on the trade-offs amongst key stakeholders, including the local community, logging companies, district government, national government and the global biodiversity community. It involves analysis and intervention at multiple scales – in Malinau this has involved working at household, community, district, national and global levels. Some of the work was conceived as action research. This has been particularly important given the rapidly changing circumstances in the district. This approach enables rapid modification of research and development programs in line with changes in the working environment.

9. The main actors are the Center for International Forestry Research (CIFOR), Forestry Research and Development Agency (FORDA – Government of Indonesia), Malinau *Kabupaten* (district government), Institut de Recherché pour le Développement (IRD), Mulawarman University, Yayasan Biofer Manusia (BIOMA – local research NGO), Inhutani II (state logging company), Tropical Forest Foundation (TFF) and the International Tropical Timber Organisation (ITTO).

D. Application of the EA principles

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

This principle is so widely accepted by the partners in this case-study that it is of little use in guiding implementation. The problem is that there are some serious trade-offs amongst different stakeholders. Local people want part of the revenue from the harvested forest resources, while in some cases they want to protect the resources. The district government may promote conservation, but they are working with the small-scale operators in highly destructive operations. The large-scale concessionaires have adopted relatively good forestry practices, but the funds generated have not benefited local people. National level players still believe that they have the option to manage the timber estate, though they have all but lost their previous power. What is "societal choice" in this arena?

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

This principle needs to be more nuanced to be useful. Decentralisation in Indonesia has led to numerous problems at the district level and below. Districts have become the main centres of power and this has not been to the benefit of forests in Malinau. The EA needs a principle that recognises the need to have different components of management at different levels.

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

Given the huge size of the area, in this case, we also need to consider the impacts on global processes (e.g. carbon cycles).

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.*

The first sentence in this principle is such common knowledge to the partners that it does not add value to the case-study. The forests are integral to the timber industry and also used for a variety of non-timber forest products. While many of the latter are for subsidence, there are also some very important marketed forest products (e.g. edible bird nests, eaglewood and rattan). The solutions proposed in the principle are important for this particular case-study, but implementation is usually well beyond the brief of the local actors. Thus, for example, subsidies on fuel are making timber exploitation, even of marginal species in marginal sites, economically viable. It seems unreasonable to expect local people to forego the timber values that they can derive from the forests. The only option may be biodiversity payments to local people by those who want the biodiversity conserved. The project implementers are exploring this option. Finding buyers for biodiversity in village settings is not easy, however, given that there are official 'protected' areas where the transaction costs would be much lower.

Principle 5: *Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.*
AND
Principle 6: *Ecosystem must be managed within the limits of their functioning.*

One could imagine a situation where logging operators could apply these principles. However, in the case-study area the small-scale operators have no interest in any form of sustainable management.

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

This seems to be a useful principle, but should be defined as 'multiple scales of analysis and intervention' to solve particular problems. The EA shows excessive optimism in terms of installing hard boundaries. There are overlapping claims by national government, large-scale concessionaires, small-scale concessionaires and local people.

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.*

There seems little hope of implementing long-term objectives in the case-study area given the short-term needs of local people and the commercial interests of logging operators.

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

The partners in the case-study work fully recognise this. The corollary espoused by the EA is that one needs to employ adaptive management. The large-scale logging company does not recognise this, having in place an immovable concession plan for 20 odd years, while the small-scale operators don't implement any kind of management. It is difficult to say that local people employ adaptive management – they are highly adaptive, but active management of natural resources is limited. We prefer the term participatory action research. Annual meetings are conducted at community and district level to reach consensus on the nature of the problems and a vision for the annual research and development plan.

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

The importance of use is recognised and various initiatives have been conducted to promote better conservation methods and less destructive logging methods.

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

Attention was paid to giving priority to local perspectives, in exercises to value biodiversity, and in empowering the communities. For indigenous rural communities, their needs and perceptions remain hidden to outsiders unless a specific effort is made to uncover them. Where external decisions have local impacts, the concerns of local communities are often overlooked and undesirable impacts, though common, are inadequately anticipated. What is needed is an understanding of local needs and a means to make these more influential in the decision-making process. This was a major component of the case-study work.

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

This seems obvious and follows from Principle 1. A wide variety of disciplines are involved, including ecology, forestry, anthropology, sociology, economics and political ecology.

E. Management of ecosystem goods and services

10. The highest value resource over the entire area is timber, but external players and district officials capture most of this value. For the past few years local people have received some benefits, but these are usually a fraction of the real value, a token. Promises made to communities often do not materialise. Within communities, in general, the sharing of benefits from timber has also been inequitable. Other high value goods are bird nests, but the benefits flow to a minority of the local elite, those who own the licences to exploit this resource. Eaglewood is another important source of cash, with a considerable number of largely hunter/gatherers being the chief producers. An enormous variety of other products are also used, but mainly for subsistence.

11. There is no real adaptive management in the case-study area, though the chief project implementers aspire to the principles.

12. Work is conducted at numerous scales. In some cases work is done with households on particular technologies (e.g. aquaculture), but a large amount of work occurs at the community level, where various empowering processes have been implemented (community mapping, provision of information, community land-use planning and farmer-to-farmer visits). Much work is also done at the district level, where attempts are being made to improve district planning activities.

F. Relevance to the thematic work programmes of the CBD

13. The case-study is relevant to the thematic area on forest biological diversity.

G. Relevance to the cross-cutting work programmes of the CBD

14. In response to particular questions in the CBD Guidelines, the case-study:

- is not relevant to the identification, control or mitigation of the effects of invasive alien species – this is a minor problem relative to the other problems in the case-study area;
- does not employ indicators of biological diversity, or of impacts on biological diversity, though initial studies documented species diversity of the major groups as completely as possible;
- is attempting to employ the use of incentive measures for conservation - biodiversity payments to a village are currently being negotiated;
- did not employ formal impact assessments (environmental, social and economic), but through systems analysis the implications of various interventions have been studied;
- has involved work on benefit-sharing measures – to get greater sharing of benefits between logging companies and local people;
- involved attention to taxonomic understanding, given the difficulty of species identification (a number of potential new species were discovered and further taxonomic work is required);
- draws heavily upon the knowledge, innovations and practices of indigenous and local communities; and
- was not part of a National Biodiversity Strategy and Action Plan.

H. Conclusions

Outcomes of the activities

15. Specific outcomes included the demonstration, with the state logging company, of the cost-effectiveness of reduced impact logging. The results are being used to inform national policy.

16. At the community level, and by adopting a learning process with the communities, one of the research teams was able to adapt to the swiftly changing circumstances. The learning cycle was rapid, allowing for several cycles in a few years – first the focus was on 'future scenarios' as a means to plan for the future, then on village mapping as a pre-condition to negotiate customary rights with government, and then on increasing communities' participation in local government's land-use decisions and village boundary demarcation. At the request of the communities themselves considerable attention has been paid to boundary issues – to identify how these are recognised and negotiated, and how they lead to particular rights and responsibilities. The communities used maps derived from such exercises as a means to negotiate their territory areas with the district and logging companies. Forest-dependent people in some areas have used CIFOR-generated data to argue their case when discussing health and education issues at the district level.

17. At the national–district nexus, the impacts of decentralisation were analysed, and facilitators worked with different groups to increase dialogue and action at the district level. The research team has already contributed to the official land-use plan for the district, which incorporates some aspects of landscape management derived from the research. Institutional analyses indicated a problem with the local legal system, and the key players identified the need for assistance with legal drafting. A workshop on this topic has just been conducted, which will hopefully lead to better preparation of local laws.

18. Work at the international level has largely comprised a search for long levers to facilitate changes in development trajectories. Potential levers include involving financial institutions and conservation concessions, in which links between local communities and major international conservation organisations have been made.

19. Given the diversity of players at different scales and with highly skewed power relations, a focus of the work is on how best to undertake negotiations among the multiple stakeholders in such arenas. The work on empowering the communities has led to a situation where some local communities are able and interested to discuss concessions. Much of the above work can be said to be empowering local communities, who are currently weak in the face of logging companies, district officials and entrepreneurs. The participation of the Punan (one of the disadvantaged ethnic groups) and women in CIFOR's community work in Malinau has visibly increased. Communities have learnt to state their needs more clearly and what the implications are for outsiders. This allows them to better express their preferences in various political forums. They are currently articulating more sophisticated land-use visions and spatial plans. We have assisted communities to map their area, allowed them to negotiate more effectively with timber companies, and given them greater confidence in presenting their case at the district level.

I. Lessons learned

20. Some cornerstones of successful integrated approaches need considerable strengthening in the Malinau work – not all of our partnerships are built on sufficient mutual trust, respect and ownership. The EA gives insufficient attention to such issues.

21. The main conclusion of the seven years of work that CIFOR has conducted in Malinau is that our ability to influence outcomes favourably has been greater because we did not go into the area with a rigid

pre-determined agenda. We did not do research only to promote particular outcomes or solve specific technological problems. We had the more general objective of exploring and seeking to understand what determined the sustainability of the forest resources and how this related to the well-being of local people. As we acquired more knowledge we adapted our programmes. We sought to get to know the communities in the area, both local villagers and the political leaders of the administrative districts. To the extent of our limited ability we sought to respond to requests for assistance in addressing local needs for information. We continue to invest in strengthening our integration and acceptance into local society.

22. It is interesting to speculate as to whether we might have done things differently over the past seven years and had higher impact with lower costs. The flexibility, pluralism and adaptability could have been more explicit and deliberate in the implementation strategy. We could have also benefited by working for greater integration and more synergy by giving more attention to the process of facilitation.

23. Other important lessons from the case-study are: (a) in dealing with large complex dynamic systems it is essential to begin in an open exploratory mode; (b) initial work must focus on learning and listening - formal 'characterisation', mapping and planning approaches will often limit flexibility; (c) the main benefit from work may be to reduce uncertainties and inform choices thus providing an improved ability to adapt; and (d) major unanticipated changes may be common in dealing with large complex natural resource systems.

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III. CASE-STUDY 2: CHIVI, ZIMBABWE

A. Background

24. The work was conducted in two small catchments in Chivi District, southeast Zimbabwe. The area is typical of a huge swathe of land in Africa – drylands with nutrient-poor soils. Miombo woodland, an extensive vegetation type in south central Africa, covers the hills. Water in wells and dams is used for small-scale irrigation. The people living in the area conduct a diverse range of activities, including dryland

cropping, raising livestock, gardening, harvesting and use of a diversity of forest products. Remittances from outside the area are crucial to livelihoods. Physical, financial, human and natural capital assets of households are severely constrained.

25. Poverty is widespread, with 70 to 90 percent of households falling below the poverty datum line (depending on what criteria are used). Woodland continues to be removed or degraded and biodiversity is threatened through clearing for agriculture and exploitation of forest products (fire wood, construction wood, wood for carving and medicinal plants). Subsistence harvesting and heavy grazing of livestock also have negative impacts. In most cases the threats arise from local people themselves, but given their needs they have little choice but to over-exploit. In addition, the institutional arrangements for managing the common pool resources are not favourable.

B. Objectives

26. The project attempts to investigate, through analysis and intervention, how poverty can be alleviated and environmental goods and services can be maintained. The main environmental goods and services are surface and groundwater, grazing resources and woodland products.

C. Approach

27. An integrated research and development approach was adopted, with a full spectrum of disciplines (hydrology, ecology, sociology, anthropology, community mobilisation, economics and agriculture). The team was drawn from the Institute of Environmental Studies, University of Zimbabwe, the Zimbabwe Ministry of Agriculture, CARE, The Centre for Hydrology and Ecology, U.K., and the Centre for International Forestry Research. A wide variety of methods and tools were used, including participatory appraisal, action research, income and expenditure surveys, remote sensing, hydrological monitoring and modelling, and systems analysis. Two community facilitators lived in the study area for over two years. Action research was conducted on tree/woodland management, micro-credit, soil and water conservation, garden expansion and crafting new governance arrangements at the district and community levels. Much of the biophysical work focused on hydrology, supplemented by biophysical surveys of geology, vegetation, soils, land cover change, agricultural practices and cattle population dynamics. The first hydrological measurements began in 1992 and continue to this day.

D. Application of the EA principles

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

This principle is so broad that it has limited use in guiding implementation. The problem is that there are trade-offs amongst different stakeholders, and there is no guidance on how best to deal with this. Detailed statements on trade-offs, equity and inter-generational conflicts would add value to the EA.

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

This is a useful principle, and has guided much of the work. Action research focused at the district level resulted in key stakeholders coming to recognise that the current bylaw system did not work. Various steps were then taken to replace it with systems based on local control and management. The need to manage at different levels still remains, however.

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

Given the short-term needs of local households, people cannot afford to consider the consequences of off-site impacts - this is a luxury. Even if they could, they have almost no capacity to manage them.

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.*

Most income from the woodlands provides a basic safety net. Given the low value of products, it also becomes impossible to internalise costs (attempts to do this may increase conflict and illegal activities). The authors of this principle seem to subscribe to the view that the replacement of natural systems by alternative systems of land use is often due to market distortions, which undervalue natural systems and populations and provide perverse incentives and subsidies to favour the conversion of land to less diverse systems. In this case-study it is difficult to see how the incentive system can be changed, short of massive external payments for environmental services by large international organisations.

Principle 5: *Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.*
AND
Principle 6: *Ecosystem must be managed within the limits of their functioning.*

In the case-study area, all management is done by local people. Local people are poor and labour-constrained. The only active management that may be possible is greater attention to some locally created and enforced rules. Thus this principle is probably not relevant to this case-study. Given the lack of any major management practices, it goes without saying that management is 'appropriately cautious'.

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

The EA shows excessive optimism in terms of installing hard boundaries. We have very detailed work that shows that 'boundaries' of resource users differ for each resource type (fuelwood, fibres, medicinal plants, grazing, water for livestock, water for irrigation etc.) and these boundaries change by season and year. Settling on a single hard boundary will be impossible. Given much reciprocity amongst households and communities over different resources there is plenty of room for negotiation and benefit sharing, but no room to create hard boundaries.

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.*

Implementing long-term objectives in the case-study area is constrained by the short-term needs of local people. People aspire to a landscape that still has woodlands, but day-to-day needs mean that degradation is inevitable.

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

The partners in the project fully recognise this. But as indicated above, it is difficult to say that local people employ adaptive management – they are highly adaptive, but active management of the natural resources is limited.

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

This principle has limited relevance as the project is about the use of the natural resources.

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

This seems obvious - attention was paid to privileging local perspectives.

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

This follows from Principle 1.

E. Management of ecosystem goods and services

28. Local households use a wide spectrum of forest products, numbering in the hundreds of species. Much of this is for subsistence use, but some products are sold. Management is limited to a few local rules and regulations, which are administered by local traditional leaders, and woodland use is regulated by a relatively strong set of customs (*e.g.* which don't allow one household to take unreasonably large quantities). Rules may be flouted, with the understanding of the local leaders, in cases where households are obviously under extreme hardship and need to access a resource in order to survive.

29. It is difficult to use the term 'adaptive management'. Households and local leaders are exceptionally adaptive, but most of the management is so passive that one could hardly call anything in the study sites "adaptive management". The implementing partners, however, find the term useful – stressing the need to continually reassess what is being done. 'Participatory action' probably better captures the implementation strategy.

30. Work was conducted at various scales: household, community and district. The partners felt that multiple scales of action were essential. The fact that little was done at the national level was a severe limitation, as national policies and processes are likely to limit any long-term success at the local level. Multiple sectors were involved in the work.

F. Relevance to the thematic work programmes of the Convention

31. The case-study is relevant to the thematic area on diversity of dry and sub-humid lands.

G. Relevance to the cross-cutting work programmes of the Convention

32. In response to particular questions in the CBD Guidelines, the case-study:

- is not relevant to the identification, control or mitigation of the effects of invasive alien species – this issue is not relevant in the case-study;
- does not employ indicators of biological diversity, or of impacts on biological diversity (while these were recognised as important, any use of indicators was going to be an imposition by external agents, as work with local people indicated that they had no time or resources to get involved in complex monitoring systems);
- does not employ the use of incentive measures for the conservation and sustainable use of agricultural biodiversity - all such systems would have to come with large amounts of external resources, which are not forthcoming from any agency;

- did not employ formal impact assessments (environmental, social and economic), but through systems analysis the implications of various interventions have been studied;
- did not make use of benefit-sharing measures – it is difficult to see how such systems could be applied in this context;
- did not further the taxonomic understanding of the organisms concerned, and did not elucidate the need for further taxonomic work;
- draws heavily upon the knowledge, innovations and practices of indigenous and local communities; and
- was not part of a National Biodiversity Strategy and Action Plan.

H. Conclusions

Outcome of the activities

33. Specific impacts include improving the functioning of local committees that have natural resource jurisdiction, initiating change in a dysfunctional bylaw system and doubling the size of the community gardens in a sustainable manner. Unfortunately, in 2002 the project had to be abandoned because of the worsening political crisis in Zimbabwe. Even so, we conclude that technical and institutional interventions can enhance safety nets, but do little to significantly reduce poverty. Managing common pool resources and affecting the institutional changes involve considerable transaction costs that people may not be able to sustain. Poverty alleviation in semi-arid regions distant from large markets is exceptionally difficult, requiring more integrated, longer-term, and multi-level set of interventions. A primary objective should be to empower people to drive their own development.

I. Lessons learned

34. Stakeholder engagement, participatory research and action research are not easy to achieve, even with good intentions and excellent facilitators. Natural resources are not just there to be managed. They represent a significant source of power for various stakeholders. Institutional change is at the core of natural resource management, but institutional change is slow, incremental and open to power politics and corruption. Local political processes proved a significant driver of change, but they were difficult to influence.

35. The problem of the 'project' as the mode of operation is clearly revealed in the subsequent analyses. Being outside the mainstream of government has the advantages that bureaucratic inertia is not an excessive obstacle, but the 'project' is too narrowly defined and is much more difficult to scale up even if it is locally successful.

36. Success took the form of creating conditions so that local people could innovate. Outside advisers and scientists enriched the pool of ideas and facilitated social learning, but did not deliver technological packages. In spite of resources and a committed and experienced team of implementers (with a relatively good understanding of the principles of integrated natural resource management) success can be highly elusive. First, the problems of poverty are immense and will not be solved by natural resource management alone. Second, national politics changed to the point where community empowerment was seen as being anti-government (in many places the state is unwilling to devolve power). Third, with the collapse of the national economy, the potential for poverty alleviation at the local level became even more difficult, given the huge importance of remittances in maintaining livelihoods. This caused a shift towards exploiting woodlands for short-term gain. Thus an approach, such as the EA, is only a part of the broader

picture needed for success. Objectives have to be realistic, especially regarding the speed and extent of change.

37. The Ecosystem Approach principles are of very limited value in guiding implementation. There must be a good set of relevant operational guidelines.

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