Land and Water Management Strategies for a Sustainable Environment the Gef Experience

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Abstract: The Global Environment Facility (GEF) provides support to activities concerning Land Degradation as they relate to the four focal areas of Biodiversity, Climate Change, International Waters and Ozone, in collaboration with the Implementing Agencies and the Conventions in particular with the UN Convention to Combat Desertification.

The purpose of this report is to describe the development of the strategy of the GEF in addressing issues related to Land Degradation and Water Management , from the definition of the "Land Degradation Interlinkages" with the GEF focal areas, to the recent initiative of "Integrated Land and Water Management".

The Scientific and Technical Advisory panel (STAP) of GEF, convened in 1999 an Expert Group Workshop on "Land Degradation Interlinkages" to explore possible interventions to address Land Degradation as it relates to GEF focal areas. Follow-up of the Workshop were the need for targeted research and the identifications of opportunities and strategies for achieving global benefits. Among these, the following issues were recognised to be useful to address GEF projects related to Land degradation: multi-benefit approach, people centred approach, integrated watershed management, sustainable agricultural practices, vegetation and forest management, energy related strategies. The policy direction within the GEF Secretariat on Land Degradation evolved towards the lines of accruing global environment benefits by protecting ecosystems and reversing land degradation trend by regional interventions by means of introducing a watershed approach. The Action Plan "Land and Water Initiative for Africa" started for enhancing support to Land Degradation**,** in the aim of facilitating an ecosystem approach, which unable the natural resources to be conserved or restored at a certain level of sustainability (Integrated ecosystem management Oerational Programs OP#12). The approval of the new approach of "Integrated Land and Water management", emphasised the fundamental issue of the social dimension and the issue of selecting criteria to assess the success of (and/or the lessons learned from) the community based case studies on integrated land and water management, in order to disseminate the good practices, including traditional systems.

Keywords: desertification, land management, water conservation

1 Introduction and background

The First GEF Assembly in New Delhi in April 1998 in its final statement recommended that "… *The GEF should seek to better define the linkages between land degradation, particularly desertification and deforestation and its focal areas, and to increase GEF support for land degradation activities as they relate to the GEF focal areas*". The Scientific and Technical Advisory Panel of the GEF has immediatly responded to this recommendation and to assist the GEF in meeting this requirement, the STAP convened an Expert Group Workshop on Land Degradation Interlinkages at the University of Bologna, Italy from June, 14 to 16 1999.

In preparation for the workshop and as a means of ensuring input from a wider scientific community a Brainstorming Session on Land Degradation Interlinkages was convened on December 4th 1998 in collaboration with the Committee of Science and Technology (CST) of the Convention to Combat Desertification (CCD). The brainstorming session was convened as a side event of the COP 2/CCD held in Dakar from November 30 to December 10, 1998, to get the experts' input, in light of their on-going

research on global change issues. An analytical framework for considering the interlinkages between land degradation and the GEF focal areas was suggested by the experts and this framework was used to guide the preparations of the background papers for the workshop.

The commitment of the workshop was to solving the pressing questions posed by Land Degradation and its interaction with other resources such as biodiversity, water resources and soil fertility etc. The workshop clarified also the definition of what is meant by Land Degradation in the GEF context; established the nature and the quantity of the interlinkages between it and the GEF focal areas, (climate change, biodiversity and international waters,) and proposed practical strategies and solutions to halt and reverse the negative trends of Land Degradation world-wide.

Recently the GEF established a Land and Water Resources (LWR) team. This marked a paradigm shift in the way the GEF has historically addressed issues relating to land and water. The Work Programme outlined by the LWR team has the overall objective of securing and maintaining the integrity of ecological systems, particularly land and water, through integrated ecosystem management.

The specific objectives of the LWR Team Programme includes, but not limited to the following:

(1) Demonstrate tangible results in on-going efforts to address integrated land and water management issues (in particular)in Africa.

(2) Operationalising the principles of integrated ecosystem management approaches to natural resource management through Operational Programme #12 and other activities.

The identification and analysis of a number of case studies on integrated land and water management with a particular focus on Africa. These case studies should have as a focus the implementation of community-based approaches to integrated land and water management as well as the science underpinning them. The specific objectives of the case studies are to compile, synthesize, and disseminate good practices in community-based application of integrated land and water management, including traditional systems and are intended to support on-going efforts by the GEF, particularly the Africa Land and Water Initiative as well as other organizations in order to facilitate wider adoption of the integrated land and water management approaches. These case studies will also contribute to a better understanding of different community-based management systems, including their origin, rationale for their adoption, major practitioners, management practices and their institutional framework (e.g decision-making processes) and the enabling environment needed to sustain these systems.

Since its restructuring in 1994, the GEF has adopted an ecosystem approach to the management of land and water resources. Through its ecosystem-based planning framework known as operational programmes, the GEF has supported projects to improve the conservation and sustainable use of biodiversity as well as management of international waterbodies.

Experience from GEF and non-GEF supported projects indicates that natural resource management in many countries has not had optimum results because of the use of sector-by-sector approaches. These approaches have led to fragmentation of policies, institutions and interventions. These lessons have brought to light the greater need for a more comprehensive and integrated approach to ecosystem management.

To facilitate a more comprehensive approach to natural resource management, the GEF has developed an Operational Programme on Integrated Ecosystem Management. This OP is aimed at catalyzing wide spread adoption of comprehensive ecosystem management interventions that integrate ecological, economic, and social goals to achieve multiple local and global benefits.

Would clarify the principles underlying integrated ecosystem management and provide operational guidelines on the use of this approach in conservation planning and implementation based on good practice.

2 The new approach

The activity of the STAP II on the cross cutting area of Land Degradation is summarised in Table 1.

The main problem of the eligibility for funds of Land Degradation projects is the fact that it is not a GEF focal area.. The origin of this is the fact that land degradation is not considered a global issue, since it regards a certain piece of land, is “confined” geographically and politically within a country or region irrespectively of the size. In order to overcame this constraint STAP tried to “globalise” the issue, using

the concept of the relationships with the other focal areas, namely Climate Change, Biodiversity and International Waters. In fact the soil and the land are surrounded by and deeply involved in atmosphere and water. Together with the vegetation and the animals, land and soil constitute a *continuum* which is global. Interventions on Land degradation influence climate, biodiversity and waters.

Table 1 Land degradation meetings, workshops and brainstorming sessions organised by STAP II

Date	Title	Venue
December 4th 1998	Land Degradation Interlinkages Brainstorming Session	Dakar (Senegal)COP2 CCD
January 1999	Technical planning meeting	University of Reading, United Kingdom
April 1999	Preparation of the background papers for the workshop.	Washington D.C.
June14 to 16 1999	STAP Workshop on Land Degradation Interlinkages	University of Bologna (Italy)
November 1999	Presentation of the Land Degradation Interlinkages Workshop Report	Recife (Brasil) COP3
December 2000	LADA Initiative Workshop	Rome (Italy)
December 2000	Land and Water Initiative for Africa	Bonn (Germany) COP4
January 2001	STAP Planning Meeting on Integrated Land and Water Management	University of Bologna (Italy)
21-26 April, 2001	STAP Technical Workshop on Integrated Land and Water Management	University of Nathal Pietermaritzburg (South Africa)

The activity of the STAP followed this scheme:

(1) Try to find an entry point for the GEF projects regarding the problem of mitigation of land degradation *per se.*

In order to achieve this objective we studied in great detail and depth the interlinkages with the GEF focal areas. (Bologna Workshop)

(2) Results of the study were the feedback and forward effects of Land Degradation on the GEF focal areas (and viceversa).

(3) Enlarge the approach to study the problem of land degradation by means of introducing a Watershed approach.

(4) Together with the GEF/SEC STAP approved to support an Integrated Land and Water management (Workshop in Bologna 2001 and South Africa 2001).

The importance of the workshops was moreover in helping to further clarify issues which could in turn result in more GEF eligible project in the cross-cutting theme of land degradation.

The aims and objectives of the meeting were:

The overall objective of GEF intervention on land degradation was summarised as two-fold: (a) to accrue global environmental benefits by protecting biodiversity and ecosystems, decreasing GHG emissions, and addressing causes of transboundary water degradation , and (b) to reverse land degradation trends in selected regions, due to conflicting uses of transboundary resources (i.e. water/energy/ irrigation/wildlife), deforestation, overgrazing, wetland reclamation.

3 Interventions: opportunities for achieving global benefits

The consideration of the interlinkages between land use change/land degradation and the GEF focal areas logically led to identification of opportunities for intervention. It was concluded however, that such interventions should not only focus on redressing the effects, such as soil erosion, vegetation destruction,

and water pollution, but also the root causes - the drivers of land degradation. These reside in local land use systems and in the interactions with the wider socio-economic system: To be effective, interventions require a «people-centred» rather than a «land-centred» approach. This implies a participatory approach that engages local communities in the definition of issues and in the design, implementation and evaluation of remediation policies, while taking into consideration that communities are not homogenous.

Another conclusion which emerged from the discussion is that interventions aimed at land degradation remediation should be evaluated in the broader context of the multi-benefit potential of such interventions.

Example of such intervention;

3.1 Vegetation/forest management/re-vegetation

Agro-forestry intervention options have the potential for securing multiple benefits in climate change, biodiversity and international waters at the ecosystem, catchment level and the biome levels.

Tree-based systems also have the potential to maintain the beneficial methane 'sink' that is characteristic of natural forest systems, preventing this greenhouse gas from escaping into the atmosphere. Complex agroforests act as sinks to methane produced from other adjacent agricultural systems such as paddy rice, cattle grazing and fire itself. A combination of different land uses including a mosaic of Agro-forest can also have climate change benefits. For example, in Indonesia 24 hectares of rubber Agro-forests serve as a methane sink for 1 hectare of paddy rice. Therefore, with a combination of a landscape mosaic of agroforests and paddy rice at a 24:1 ratio, there will be no net emissions of methane to the atmosphere (Sanchez, 1997).

Replenishing soil fertility in sub-humid and semiarid degraded lands also plays a vital role in reducing carbon emissions. One study estimates that as much as 66 tonnes of carbon per hectare can be sequestered in Africa over a 20-year period by replenishing soils through a combination of agro-forestry options and nutrient re-capitalization (Sanchez, idem) Improvement of soil fertility not only result in improvement in CO_2 storage in the soil but also result in better water-holding capacity in the soil. This means that the water balance will be influenced and there will be less run-off and less sediment transportation to the transboundary water bodies and aquatic and marine ecosystems.

Sustainable forest management strategies also result in biodiversity and international waters benefits. In the case of biodiversity preservation of forests and/or regeneration are beneficial for habitat protection and this in turn support biodiversity. The increase water-holding capacity of soils associated with such interventions also results in multiple benefits to international waters. The increase water-holding capacity of soils reduces the impacts of extreme events such as flooding, reduces the potential for sediment transport etc. securing significant benefits to aquatic and marine ecosystems.

In the consideration of global benefits, and at the request of the implementing agencies particular focus was placed on formulating criteria for assessing globally significance of biodiversity in drylands. The questions outlined in the following Box. It can be used as a basis for the GEF for determining globally significance of proposed biodiversity/land degradation project.

3.2 Box key access points for interventions

Several key activities have been described as central to water and ecosystem management, which if applied would mitigate the impact of land degradation on international waters, and *vice versa*. These include;

- Integrated water resources management and use (water laws; water rights; institutional structures; planning, management and decision making processes; providing access to drinking water and sanitary services, especially in urban areas; mitigating natural hazards; and the management and resolution of trans-boundary conflicts).
- Economic and legal policies to support sustainable development (management of water demands through pricing and incentives for conservation, valuation of water and water-related services, and economic impacts of pollution and resource over exploitation).

- Access to technology and participation in decision making (legal and administrative instruments that enable direct involvement of water users and government and other stakeholders in water planning, development, and management).
- Strategies for financing and investing in water resources (approaches and strategies to fund water resources development projects, non-structural measures, and improvements in water resources management).
- Access to information and technology to improve the management of water resources (mechanisms for sharing information, water technology, and management experiences between organisations and countries; promotion of appropriate technologies that support sustainable development; and public education and training).

4 Response

4.1 Analysis of case studies

To facilitate the analysis, the experts examined the case studies from the point of view of the approach employed, the geographical scale of the intervention; the enabling environment which contributed or not contributed to the success and/or sustainability of the intervention, the governance structure, the predominant land use and the involvement and/or linkage with the scientific community at the local, national, regional and/or global level.

In a general a diversity of initiators (approaches), scales and governance structures were observed. Scale was taken as the boundaries defined by the project itself rather than insisting on catchment boundaries or political boundaries. A striking feature of the approaches employed is that projects have been originated by a broad diversity of actors. In some cases, communities have conceptualised projects themselves, and assisted by NGOs. In other cases, the commercial sectors were the originators and sought to build joint ventures with local communities. In other cases, the origin has been with the scientific community, and/or the national governments.

In most cases, the enabling environment in terms of some form of legislative support was in place. Governance/management systems varied from voluntary to national authority devolved to the village level.

In addition, a set of indicators for assessing the success of these case studies was designed. Time however did not allow the application of these indicators to the case studies presented. It was generally agreed that the indicators should reflect the “five pillars” as presented in the NAPCOD case study, namely: Biophysical, Socio-economic, Policy, legislation and management, Science and Capacity Building (see Fig.1). Possible indicators which were identified include:

(a) Stakeholder involvement, inclusiveness of the concept of community;

(b) Building upon existing institutions and structures;

(c) Outputs exceeding inputs; tangible socio-economic and environmental benefits for sustainable livelihoods;

(d) Level of independence on external inputs;

(e) Biophysical indicators, e.g., soil erosion mitigation, pollution control, biodiversity conservation;

(f) Policy environment in support of the activities;

(g) Local capacity build to manage.

A general conclusion which emerged from the analysis of the case studies is that integrated land and water management will fail if knowledge and science does not form the basis of GEF interventions in this area. It was emphasised that what is required is a framework which links science communities and policy-makers to facilitate a new approach to integrated land and water management. In this context, the concept of “decentralized” land and water management was raised and the need for guidelines on how to approach it.

The lessons learnt from the experiences in the case study should be clearly outlined. Areas of focus should include the enabling environment which contributed to the success and failure of the project activities; the decision making processes; the relationship between resources and livelihoods, the role of

formal science and its inter-linkages with ethno science; how will the project deal with major changes in the future (adaptive management etc.)

4.2 Recording the experience of the case studies

After much discussion on the best way of presenting the case studies in a format that can be used by persons designing interventions on land and water management, it was decided that a 'Source Book' would be appropriate. Such a product could be used as a guide to persons developing GEF interventions in integrated land and water management and integrated ecosystem management. It was further agreed that the 'Source Book' should be divided into five section, addressing the state of science; the paradigm shift in progress in the GEF and STAP's role in that process; the presentation of the actual case studies; an analysis of lessons learnt and the implementation of 'decentralised' integrated land and water management as a strategy.

4.3 Lessons learnt and recommendations

An overview will be presented on the main lessons learnt from the case studies experiences. These lessons will be synthesized and presented as a guide to some of the good practices to Integrated Land and Water Management. It will also highlight some of the less successful lessons learnt from the case studies.

Looking Toward the Future:

Implementation of Decentralised Integrated Land and Water Management.

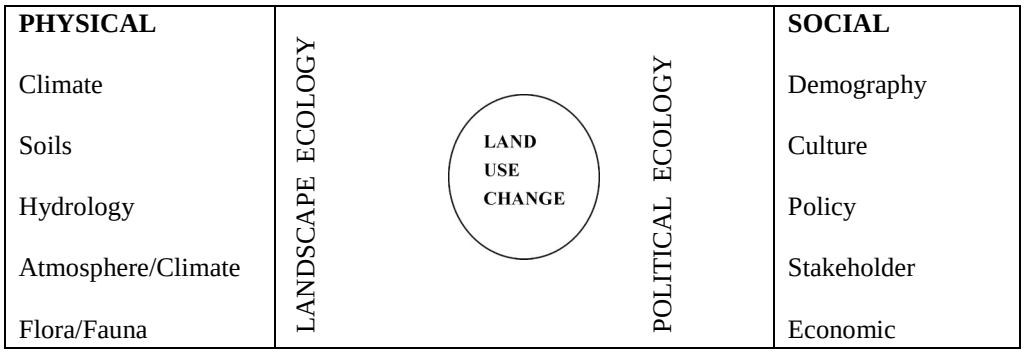

Fig. 1 Complexity of Ecosystems

References

Berry L. and Olson J., 2001, G.E.F. Land Degradation Linkage Study, Working paper no. 6, G.E.F.

G.E.F. (Global Environmental Facility), June 1997, Operational programs.

Middleton N. and Thomas D., 1997, World atlas of desertification, United Nations Environment Programme.

Nabhan H., Mashali A. M. and Mermut A. R., 1999. Integrated soil management for sustainable agriculture and food security in southern and east Africa; proceedings of the expert consultation. – F.A.O.- U.N., AGL/MISC/23/99, Agritex

Watson R. T., Dixon J. A., Hamburg S. P., Janetos A. C. and Moss R. H., 1998, Protecting our planet securing our future, linkages among global environmental issues and human needs, U.N.E.P., U.S. N.A.S.A, The World Bank.