

GEM-CON-BIO



Governance and
Ecosystem
Management for the
CONservation of
BIOdiversity



Policy Guidelines on Governance and Ecosystem Management for Biodiversity Conservation



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**GEM-CON-BIO – GOVERNANCE AND ECOSYSTEM MANAGEMENT
FOR THE CONSERVATION OF BIODIVERSITY**

Policy Guidelines on Governance and Ecosystem Management for Biodiversity Conservation

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Introduction

In Europe, human societies have affected their landscapes and the other species living there possibly more than anywhere else in the world. The change has been so pervasive that many of our biodiversity rich areas can only be maintained and conserved through some form of human intervention and management. As a matter of fact, biodiversity and human wellbeing have become so closely intertwined that it is nearly impossible to separate them.

Today, our capacity and willingness to extract natural resources or modify our ecosystems has increased exponentially and even the landscapes we protect for their value in sustaining biodiversity are surrounded by intensively used areas. Overall, the effect on biodiversity and our future wellbeing is not positive. Despite protecting more of the European continent than ever before (some 18% of the European Union is protected under Natura 2000 alone), we are still witnessing strong rates of species decline (for instance 42% of native mammals, 43% of birds, 45% of butterflies, 30% of amphibians, 45% of reptiles and 52% of freshwater fish are said to be declining in numbers throughout Europe¹). Political targets have been established to implement the policies that will address this decline. Much of their focus is not on nature protection legislation or activities, but rather on those sectors of natural resource use and economic development that have the greatest impact.

It is against this background that the GEM-CON-BIO project was developed with the tenet that only through the equitable and sustainable governance and management of natural resources it will be possible to conserve biodiversity in Europe and elsewhere. In agreement with the prevailing view of the global community, it was also taken on board that conservation work should be carried out at the ecosystem level and that ecosystem functions should be fully valued (in all senses of the term) in order to achieve some form of sustainable development. As biodiversity underpins much of the ability of ecosystems to provide life-sustaining functions, we ought to warrant special attention to it. Ecosystems perform environmental functions such as supporting, regulating, cultural and provisioning delivers goods and services which may have the character of private or public goods. Ecosystem's goods and services such as food and fibre, fresh water, ornamental resources, wood, recreation and educational services, etc. can be easily exchanged through markets and treated as commodities. On the contrary other ecosystems goods and services such as spiritual, aesthetic, artistic, etc. inspiration, cultural and historical identity, habitats for wild species, air & water purification, climate regulation, erosion control, etc., for their characteristic of being public goods can not be exchanged automatically through markets so often resulting in externalities.

The acknowledgment of the importance of delivering public goods such as those resulting from ecosystems supporting and regulating functions, has resulted in the development, for instance by EU's agri-environmental policy, of instruments and tools to achieve provision of these goods and services by using markets, quasi-markets or regulatory tools. This is what is done for instance when the costs of maintaining the aesthetic qualities of the landscape are internalised in the price of staying in the holiday farms (e.g. agri-tourism), or when the costs of biotopes conservation is compensated by the payments of agri-environmental programmes, or when the cost of not using chemical pesticide (e.g. reduced yields) is internalised by a higher price of organic products.

The need for the adoption of different policy instruments for the management of ecosystems is further enhanced by both territorial and time considerations. In fact soil erosion and water run off control, landscape and biodiversity conservation, etc., impacted by socio-economic activities

¹ European Commission, (2006), Annex to the Communication from the Commission: Halting the loss of biodiversity by 2010 and beyond, Sustaining ecosystem services for human well-being: Impact assessment, Commission Staff working document, COM(2006)216 final, Brussels.



have an indisputable territorial specificity. This territorial characteristic of ecosystems goods and services has to be considered in relation to different scale of analysis. For instance soil erosion and water run-off control have an evident importance at the level of the single field but also at the level of water catchments because of the impacts of transported sediments, whereas the conservation of biodiversity of some local species can represent a global interest as much as the greenhouse gases sequestration, etc. These examples are important because show how to eventual costs incurred at local level to supply environmental goods and services could correspond benefits at higher spatial scales (i.e. at local, regional but also at national and global levels). Furthermore drivers of change originated at higher spatial level than local, such as CAP, CFP, climate change policy, are exerting a great impacts the effectiveness of governance and ecosystem management for biodiversity conservation locally. This fact has obvious consequences on matching the supply with demand of these goods and services and on problems of equity in distributing related costs and benefits, making the existence of positive and/or negative externalities very likely.

Following this reasoning, it has to be pointed out that also the temporal dimension plays an important role when dealing with ecosystems goods and services. In facts very often positive and negative impacts exerted by socio-economic activities on the supply of environmental goods and services are detected not just at different spatial levels but also at different times. For instance the effects of a reduction of a natural habitat's extension by conversion to agricultural use, or the loss of biodiversity because of excessive use of pesticides, may not be detected immediately but showing the seriousness of the negative impacts on the survival of some species only after some years. By the same token, the environmental benefits coming from a reduction of chemical fertilizers polluting the water table and soil can result only after a certain time span often of years. Also in the case of time lag of impacts on the capacity of ecosystems to deliver environmental goods and services, it is reasonable to foresee the presence of positive and/or negative externalities creating problems of equity in the distribution of costs and benefits in some cases even of intergenerational character.

The GEM-CON-BIO analysis is indicating that governance and ecosystem management in order to be effective for biodiversity conservation have to adopt and implement an ecosystem approach. This means that all the supporting, regulating, cultural and provisioning functions of ecosystems have to be taken into account by governance and ecosystem management, not just those resulting in the delivering of goods and services which can be exploited and exchanged through markets in the short term. Another outcome of the GEMCONBIO analysis is that setting the right management objectives is very important for biodiversity conservation. These have to be identified in relation both to the site specific ecological, economic and social characteristics and to the regional, national and international needs for biodiversity conservation so to select what are realistic biodiversity objectives to be set and integrated into sectoral and management plans locally. In facts to conserve biodiversity, it is not enough to try to reduce the pressure exerted by socio-economic activities on the environment and conserve biodiversity in protected areas. What is needed is that also socio-economics activities carried out at all levels will be rearranged around biodiversity conservation objectives. In other words there is the need to create a nature conservation sector with precise and measurable biodiversity conservation objectives to be achieved, involving populations and the development of socioeconomic activities based on innovative/traditional practices and technologies operating at different hierarchical levels.

The analysis of GEM-CON-BIO case studies indicates that an appropriate mix of public administration, community participation and market based governance, is supposed to work better for managing ecosystems for biodiversity conservation than single type of governance. The same can be said for the mix of regulatory, participative and economic/financial instruments to be implemented. The realization of ecological corridors linking Natura 2000 sites for instance, could be based on mixed types of governance capable of developing long term strategies and



management plans taking into account biodiversity objectives, appropriate instruments to be used to achieve those objectives. Among these adaptive management could certainly be a more useful instruments than as it is now, if good monitoring and control of impacts of ecosystem management on biodiversity conservation would be carried out more effectively and consistently around Europe.

Objective and scope of the GEM-CON-BIO project

The overall objective of the GEM-CON-BIO project was: “to explore the interactions between governance modes and sustainable development objectives in view of identifying what governance processes and institutions can best contribute to the conservation of biodiversity” (GEM-CON-BIO project, Annex 1, 2006). “Governance”² is a relatively new and powerful concept that conservationists should understand and clearly distinguish from ‘management’. While ‘management’ addresses what is done about a given site or ecosystem, ‘governance’ addresses who makes those decisions and how. Governance is about power, relationships, responsibility and accountability. It is about who has influence, who decides, and how decision-makers are held accountable. Graham *et al.* (2003, p. 2–3) define governance as

“the interactions among structures, processes and traditions that determine how power is exercised, how decisions are taken on issues of public concern, and how citizens or other stakeholders have their say.”

‘Government’ and ‘governance’ have similar roots, but ‘government’ generally refers only to bodies and processes that are largely separate from citizens, the private sector and civil society. Governments are key players in governance but are only one among the many possible players. As affirmed by the UNDP (1997):

“Governance includes the state, but transcends it by taking in the private sector and civil society. All three are critical for sustaining human development. The state creates a conducive political and legal environment. The private sector generates jobs and income. And civil society facilitates political and social interaction - mobilising groups to participate in economic, social and political activities. Because each has weaknesses and strengths, a major objective of our support for good governance is to promote constructive interaction among all three.”

Governance settings depend in large part on formal mandates, institutions, processes and relevant legal and customary rights. But they are more complex and nuanced phenomena than one may imagine, not easy to circumscribe. Regardless of formal authority, decisions may be influenced by history and culture, access to information, basic economic outlook and many other factors. Any simple governance typology is necessarily crude.

In this document we adopt the following definition: “biodiversity governance” is interpreted “as the way society at all scales manages its political, economic and social affairs with the aim to **use and conserve biodiversity**”.³

In order to assess how **governance** and management of ecosystems relate to the complex issue of biodiversity conservation, there is the need to understand how governance changes affect biodiversity changes through time. More specifically it is important to understand how governance affects management and how management, in turn, impacts upon biodiversity. With this objective in mind, GEM-CON-BIO researchers have analysed 29 case studies at different spatial levels and time frames. The case studies analysed in GEM-CON-BIO can be

² The following 3 paragraphs draw from Borrini-Feyerabend, G., J. Johnston and D. Pansky, “Governance of protected areas”, pages 116-145 in Lockwood, M., A. Kothari and G. Worboys (eds.), *Managing Protected Areas: a Global Guide*, Earthscan, London, 2006.

³ This is the definition used in the GEM-CON-BIO report on Ecosystem Governance in Europe (Galaz, Hahn and Terry, 2006), and revised by Terry (2007).



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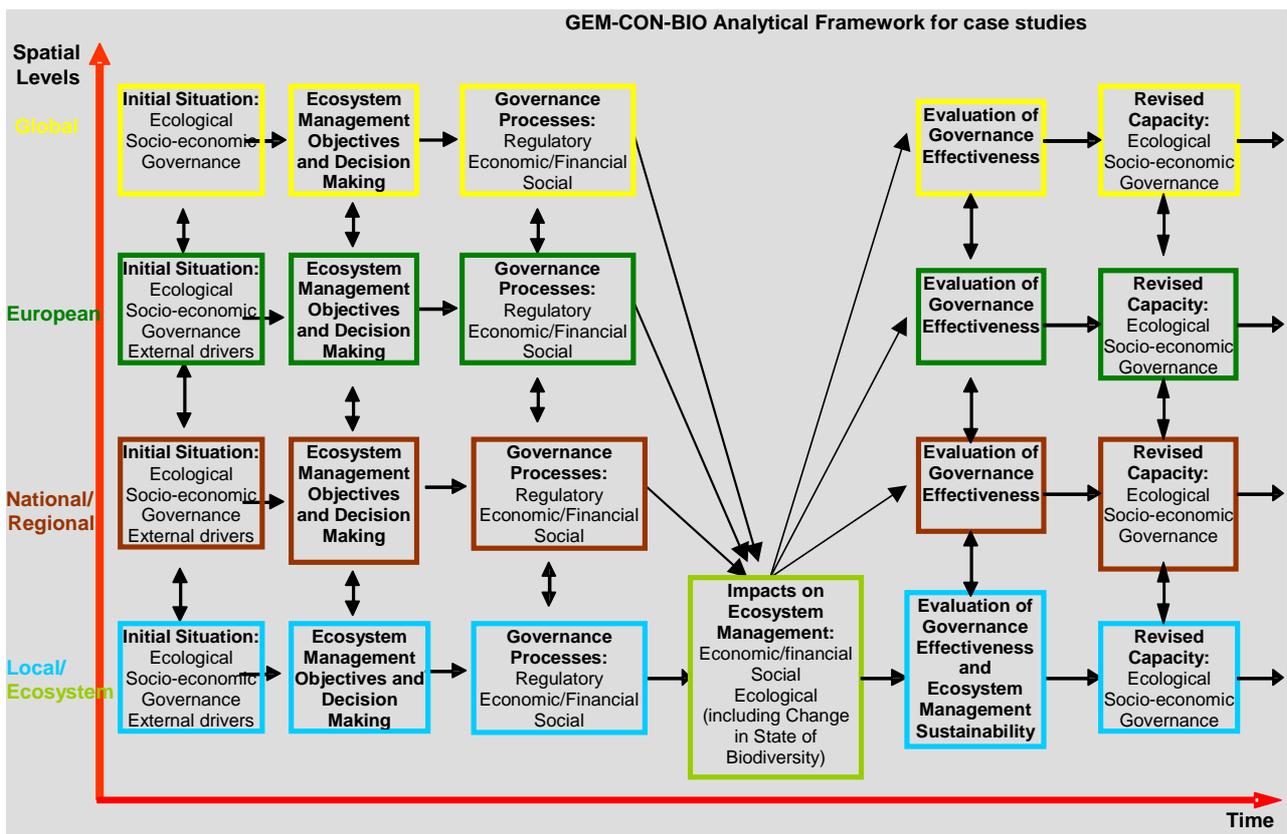
distinguished in three groups. Those carried out:

- in EU and USA at ecosystem/local level;
- in Third Countries other than USA, adopting a slightly different analytical framework; and
- focussing the analysis on one or more specific uses of natural resources and biodiversity at international/European level.

Each case study has been analysed using an analytical framework. The basic framework groups around 70 research questions/variables into five clusters structured around a rationale. The analytical framework identifies natural, social, economic, institutional resources, external drivers, and major threats affecting a case study area. These are taken as determining factors of **governance initial capacity** for setting ecosystem management objectives and decision making.

Both initial capacity and ecosystem management objectives influence the **governance processes** adopted (regulatory, economic/financial, societal instruments) which results in **impacts** of different characters (economic and financial, social and ecological, including biodiversity change) on the situation of the study area. **Evaluation of governance performance** is carried out in each case study by comparing initial situation with the final one in a defined period of analysis at a specific spatial level (local, regional, national, European) as shown in Figure 1, below.⁴

Fig.1 Governance and ecosystem management: different spatial levels and time dimensions



(Source: Terry and Simoncini, 2007)

⁴ Terry Andrew and Simoncini Riccardo, 2007, *GEM CON BIO Guidance Manual*, Vers.3, GEM-CON-BIO Technical Report, IUCN.



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The analytical framework to carry out case studies provides a common research tool to identify what are the most significant **governance** and **critical ecosystem management characteristics** which may relate to conservation results and sustainable use of biodiversity.

The term “Critical ecosystem management characteristics” in this document is referring to “*The main types of instruments which are used to manage natural resources both for purposes of conservation and purposes of economic benefits in order to achieve biodiversity conservation and sustainable use*”⁵.

Once identified, these critical management characteristics have been used to associate governance analysed in case studies to governance “ideal” types identified as the most recurring in literature.

The governance types analysed for EU and US case studies, as identified by the GEM-CON-BIO research team (Galaz, Hahn and Terry, 2006; Terry, 2007), are the following:

- 1) State Controlled: a) National/Federal; b) Decentralised; c) Delegated; d) Corporatist
- 2) Community based
- 3) Policy Network Group
- 4) Market based

For what regards the case studies in non-western Third Countries, the Governance types analysed are those proposed by Borrini-Feyerabend and Lassen, (2007)⁶, as follows:

- 1) Government-based
- 2) Shared governance
- 3) Community governance
- 4) Private governance
- 5) Open Access

For non-western Third Country case studies it is important to note that a basic distinction among governance types is made by Borrini-Feyerabend (2004)⁷ on the basis of “*who holds de facto management authority and responsibility and can be held accountable according to legal, customary or otherwise legitimate rights*”.

The main objectives of integrating governance “ideal types” and key factors/variables of management characteristics of the analytical framework to carry out case studies have been:

- To draw conclusions on impacts of characteristics of governance types on biodiversity conservation
- To assess the performance of different governance types in terms of biodiversity conservation

The analysis of the 29 case studies showed many differences amongst case studies for what regards:

- ecological, social, economic, cultural, and institutional contexts,
- spatial level (e.g. ecosystem/local or national/international levels)

⁵ See WP3, task 3.1, pag. 32, ANNEX I, GEM-CON-BIO project (31-10-2006)

⁶ Borrini-Feyerabend, G. and B. Lassen, 2007, *GEM-CON-BIO Guidance Manual for Third Country Case Studies*, Adaptation of Andrew Terry and Riccardo Simoncini GEM-CON-BIO Guidance Manual to Third Countries on the basis of advice from field-based colleagues in Third Countries.

⁷ Borrini-Feyerabend, G., 2004, *Governance of Protected Areas, Participation and Equity*, pages 100-105 in Secretariat of the Convention on Biological Diversity, *Biodiversity Issues for Consideration in the Planning, Establishment and Management of Protected Areas Sites and Networks*, CBD Technical Series, 15, Montreal (Canada), 2004. <http://www.biodiv.org/doc/publications/cbd-ts-15.pdf>.



- temporal dimension (e.g. the time span analysed).

It is clearly an added value of the GEM-CON-BIO analytical framework the fact of being flexible enough to be applicable to three categories of case studies. This value could be further manifested in a possible future analysis of case studies, which will enable further comparisons and analysis of more detail. However it has to be pointed out that for the time being, the analysis has been partially constrained by the limited number of GEM-CON-BIO case studies. This is evident particularly when the total 29 case studies are sub-divided, for reasons of comparability, in EU and US case studies carried out at ecosystem/local level (17), EU case studies at national/international level (3), and “non-western” Third Country case studies (9).

In this sense, the findings of the analysis applied to GEM-CON-BIO case studies need to be confirmed by carrying out the analysis on a greater number of case studies.

Despite the above-mentioned limitations, we believe the project allowed to draw some interesting qualitative results and, from those results, to develop policy recommendations on ways to improve governance for biodiversity conservation.

The recommendations for guiding policies addressing governance and biodiversity conservation are developed on the basis of the project’s main findings according to the respective level of analysis. For each of the groups of GEM-CON-BIO case studies, recommendations referring to the governance of biodiversity in EU countries are reported in Part A and recommendations referring to EU development policy for collaboration with Third Countries are reported in Part B.



Part A - Policy guidelines for improving governance for biodiversity conservation in the EU

A.1 Considerations for improving governance for biodiversity conservation at local/ecosystem level in EU

A first result emerging from the analysis is that impacts of governance usually are either good or bad but not neutral, for all the ecological, economic/financial and social/cultural aspects related to biodiversity conservation.

Among the 17 GEM-CON-BIO EU and US case studies, 13 are showing positive assessments of the impacts of governance to biodiversity conservation, and 4 are showing negative impacts.

Considerations for improving governance that emerged from the analysis, are:

- ***Employing and co-ordinating as many as possible natural, social, cultural, economic and institutional resources and capacities contributes to improving governance and conserving biodiversity***
- ***Adopting a mix of different types of governance to manage ecosystems according to site-specific ecological, social and economic needs also promotes biodiversity conservation***

From the analysis emerges that in study areas, a mix of governance types⁸ appears to perform better than single governance types for what concerns **state of biodiversity**. In fact 7 out of 8 study areas with mixed governance types are showing an improvement of the state of biodiversity and only one a deterioration. Instead, among those study areas with only one type of governance, 5 out of 9 show an improvement in the state of biodiversity, 3 a deterioration and 1 no changes.

Also for the impacts of different governance types on ecosystem conservation, on sustainability of resource use and on the generation of knowledge, it results that among GEM-CON-BIO EU and US case studies, **mixed types of governance are performing better than single types**. In the 8 case studies showing a mix of governance types, these 3 critical ecosystem management characteristics are all valued positively in 7 case studies while only in one case resource use is considered not yet sustainable but improving. On the contrary, among the 9 case studies adopting one type of governance, only in 1 case study maintenance of ecosystems, sustainability of resource use and generation of knowledge are all showing positive evaluations. This can be interpreted as an indication that to achieve ecological, economic and social sustainability of resource uses in reference to the complex objective of biodiversity conservation, it may be necessary also at local level to develop and implement simultaneously different types of governance, as for instance often it happens within protected areas for core and for buffer zones. This would allow to better shape different governance types qualities to site specific ecological, social and economic conditions to enhance biodiversity conservation

⁸ These are: 4 case studies with a mix of a predominant State controlled National/Federal (at least for 50-60%) and different minor percentages of other forms of governance, 3 case studies with a mix of a predominant market based (at least for 50-60%) and different percentages of other forms of governance and 1 case study with a mix of Policy network based (75%) and Market based (25%) forms of governance.



- ***Positive conservation results are more likely to occur in areas where there is a predominance of state (or regional/federal) ownerships and a large proportion of land is covered by woodland, forest and other wooded land ecosystems.***

To investigate what critical ecosystem management characteristics exert higher impacts on biodiversity conservation it has been necessary to investigate at first some features of study areas,. From the analysis carried out it emerges that both **area extension** and **population density**⁹ below 100-150 inhabitants/Km² seem not to correlate with governance effectiveness for biodiversity conservation. Positive conservation results are more likely to occur in areas where there is a predominance of state (or regional/federal) ownership and a large proportion of land is covered by woodland, forest and other wooded land ecosystems

For what regards the **ownership structure**, the 8 GEM-CON-BIO EU and US study areas with a predominance of state ownership for at least 55% of their extensions show 7 positive impacts and only one negative on state of biodiversity, while the 9 study areas with a predominance of private ownership for at least 55% of their extension show 5 positive impacts, one neutral and 3 negative. This result was largely expected given that some Protected Areas under strict management regimes are usually under state ownerships in EU and this was indeed the case for the protected areas analysed by GEM-CON-BIO case studies.

For what concerns the relationship between conservation results and **main ecosystem typologies**, from the analysis carried out on GEM-CON-BIO EU and US case studies at ecosystem/local levels, it appears that woodland, forest and other wooded land are those more easily managed for biodiversity conservation (8 positive impacts, one neutral and only one negative) compared to agricultural land (3 positive and 2 negative impacts) and inland surface water (1 positive and one negative impact).

- ***Strong leadership role by individuals and/or organisations can improve governance.***

Biodiversity conservation benefits from strong commitment by institutions and by high levels of vertical and horizontal integration amongst and within these institutions. The analysis of critical ecosystem management characteristics of GEM-CON-BIO EU and US case studies at ecosystem/local levels, shows that, among the institutional aspects considered, the **leadership role** is the most influencing factor. In facts, contrary to other parameters, such as “levels of vertical and horizontal integration”, “community participation” and “multi level governance”, leadership role shows, among case studies analysed, a very good correlation with the state of biodiversity. This result if confirmed by an analysis carried out on a greater number of case studies could be interpreted as the fact that actually in institutional functioning, it is the willingness, capacity and determination, of single individuals or organisations which make a difference for biodiversity conservation. This could be an indication to reform institutions and their functioning in order to make them more apt to deal with biodiversity conservation.

- ***When developing and implementing management plans, all the environmental functions provided by ecosystems should be taken into account***

For what concerns the management objectives analysed in EU and US GEM-CON-BIO case studies at ecosystem/local levels, **all environmental functions provided by ecosystems (i.e. “supporting”, “regulating”, “provisioning”, and “cultural goods and services”)** when

⁹ However it has to be noticed that within 16 GEM-CON-BIO case studies population densities are quite low. In facts the average is around 50 inhab./Km². This analysis result alone therefore does not contradict the plausible argument that the greater the population density living in an area, the greater will be the impact on the environment.



prioritised in management appears to have **an evident influence on the biodiversity conservation**.

Our case studies show that when ecosystem management prioritises only the production of goods and services which have the character of private goods (commodities) usually resulting from provisioning and cultural services, without considering also the production of public goods (non-commodities) usually resulting from supporting and regulating services, there is a serious risk of negatively impacting biodiversity. For instance in agri-ecosystems this attitude towards objectives and management of ecosystems heavily unbalanced toward production, can be imputed to the functioning of the market mechanism which is a very good tool to value commodities, but not capable to value appropriately public goods and services such as those deriving from ecosystems regulating services (i.e. non-commodities). This means that farmers cannot reap the benefits of managing ecosystems for the supplying of public goods such as biodiversity conservation unless some agri-environmental payments are envisaged for the delivering of these ecosystems services.

- ***Biodiversity conservation objectives need to be explicitly set and integrated with social and economic objectives in management and sectoral plans***

Among case studies analysed, ecosystems management objectives are exerting a great influence on the impacts on biodiversity.. In the case of management objectives, 15 out of 17 EU and US case studies at ecosystem/local levels, show a good correlation between state of biodiversity and the clarity of management objectives according to the ecological, social and economic local situation. This is also in line with the information given by authors in their case studies synthesis and reported in the synthesis of GEM-CON-BIO EU and US case studies. In the 17 EU and US case studies analysed objectives are either “appropriate” or “not appropriate” simultaneously for all the natural, economic/financial and social/cultural objectives in management or sectoral plans. In facts in 10 case studies, the management or sectoral plans identify the appropriate objectives for all the natural, economic/financial and social/cultural aspects, while in other 5 case studies all the objectives are unclear or lacking.

If the results of the analysis carried out on 15 case studies would be validated also by a greater number of case studies, then this could be an indication that **appropriateness of management objectives** is a very important factor for the resulting state of biodiversity.

A further indication which could be envisaged from the results of the analysis, is that, in case study analysed, there is a strong relationships between the degree of appropriateness of objectives for biodiversity conservation and the well functioning of the processes implemented to achieve those objectives.

Another interesting information coming out by the synthesis of case study outcomes is the influence of protected area status on definition of natural objectives. 12 case study areas out of 17 are all or for a part situated in biosphere reserves or protected areas, or at least managed directly for conservation (at least for a minimum extension of 10%). From the analysis of natural objectives in these case study areas emerges that natural management objectives are fully appropriate or appropriate only for 8, while the remaining 4 have not sufficiently appropriate or existing/implemented natural objectives. This result, if supported by a higher number of observations, could be interpreted as the fact that the protected area status alone is not a sufficient condition for setting right management objectives for biodiversity conservation.



- ***To achieve biodiversity conservation both participatory processes and regulatory tools are necessary. Market tools and/or quasi-market measures (e.g. agri-environmental payments) may also have to be used ...particularly where conservation measures pose real or opportunity costs for competing economic activities.***

Coming to key policy instruments, the analysis carried out shows that, among EU and US GEM-CON-BIO case studies at ecosystem/local levels, the types of governance associated to key policy instruments which are performing better in terms of impacts on the state of biodiversity, maintenance of ecosystem services and sustainability of resource use are governance types mainly using **regulatory tools** (i.e. state controlled centralised/ decentralised governance types) and those preferring to adopt some **participatory processes** (i.e. state controlled delegated, community governance and policy network governance types). The performance of **market based** governance types show both positive and negative impacts on state of biodiversity, maintenance of ecosystem services and sustainability of resource use.

In facts comparing the functioning of different processes from case study outcomes shows that regulatory processes are the ones adopted in all case study areas and the best functioning. Also economic/financial, social/cultural and institutional processes are widely used (14 case studies the first two and 16 the last) despite with different functioning (economic/financial and social/cultural scoring 9 well functioning, while institutional processes only 4).

In order to identifying more sustainable governance and ecosystems management, there is the need to develop a multifaceted strategy to be implemented by different instruments of governance to promote more benefits for farmers supplying biodiversity's goods and services. These for instance can be based on regulatory instruments and site specific agri-environmental or forestry measures proposing payments more focused on the delivering of ecosystems regulating services (i.e. public goods) than on commodities production. Agri-environmental measures supporting organic or integrated cultivation methods need to take into account also conservation of natural and semi-natural habitats. The 2003 CAP Reform introducing payments for NATURA 2000 sites in going on the right direction. However habitat conservation measures have to be more widely adopted in the whole European countryside to build ecological corridors linking different Natura 2000 sites in order to be effective in biodiversity conservation.

- ***Any type of governance needs good monitoring of biodiversity to set in place adaptive management strategies, which allow offsetting negative impacts and enhancing positive impacts.***

Finally, among EU and US GEM-CON-BIO case studies at ecosystem/local level, for adaptive management not an evident correlation seems to be present with state of biodiversity. This fact can be interpreted as an indication that there is a need for better and more organized monitoring of how biodiversity responds to changes in management. Such information allows developing and implementing strategies that at least attempt to offset negative impacts and to enhance positive ones.



A.2 Considerations for improving governance for biodiversity conservation at national/international level in EU

The three GEM-CON-BIO case studies addressing governance at national/international levels in EU have analysed the management of different ecosystems by focusing on 2 economic activities and 6 recreational uses of wild resources (see attached list of GEM-CON-BIO case studies) and the resulting impacts on biodiversity conservation.

The types of governance analysed by these case studies are complex and include mix of different forms of state control and market based governance.

Despite both the limited number of case studies and the complex types of governance analysed, some interesting information is pointed out by the outcomes of case studies. This information can offer some points for discussion and it is presented in the following:

- ***Governance of ecosystem management at EU level needs to take into consideration the diversity of ecological, social, economic, cultural, historical and institutional aspects among and within countries***

From the ecological and socio-economic points of view, Europe is very diverse. Diversity is probably the most identifying character and richness of Europe together with the capacity and willingness of European citizens to be unified under the respect of such diversity. Diversity amongst and *within* European Countries shall be taken into account and respected while developing governance and ecosystem management for biodiversity conservation. Failure to do so will mean to define something which will not be sustainable.

Beside the above it is a well-accepted fact that governance of biodiversity and landscapes is the more successful when it is site specific, covering complex systems of biotic, abiotic and aesthetic components within the ecological dimension. Adding considerations of social and economic characters to the picture only enhances the specificity of each situation.

- ***Decisions on governance and ecosystem management taken at national and international levels need to be better communicated to achieve the collaboration of local stakeholders towards conservation goals***

Better vertical and horizontal integration of multi level governance institutions has to be achieved in biodiversity conservation. In facts often the lack of stakeholder involvement in the decision making affects the level of compliance and enforcement with the conservation measures adopted. Involvement of both institutions operating at different hierarchical levels and between institutions and populations is a key process in increasing integration and effectiveness of policy implementation.

For instance from the case study on North Sea fisheries has emerged that there is a long history of conflict between fishermen and the CFP/representative institutions/scientists that is often manifested as illegal landings. The control/enforcement of regulation is considered quite low but Member States have now agreed on stronger control measures in the North Sea. Politically, stakeholders did not feel sufficiently involved in the management process. This lack of involvement had undermined support for and compliance with the conservation measures adopted in the past. The North Sea Regional Advisory Council (NSRAC) was established in 2004 to facilitate this process by involving local stakeholders into the decision-making process.



- ***Governance needs to pay greater attention to all ecosystem services and associated cultural values***

Conservation of biodiversity requires a holistic approach capable of integrating commodities extraction/production and the maintenance of ecosystems services (i.e production of non-commodity goods) that are fundamental to human welfare. At Community level this has been prioritized by the policy framework to halt biodiversity loss in the EU. Biodiversity objectives are, for example, integrated in the Sustainable Development Strategy (SDS) (COM (2001) 264 final), the Lisbon partnership for growth and jobs, and in a wide range of environmental and sectoral policies. An EC Biodiversity Strategy (COM (1998) 42 final) was adopted and related Action Plans (COM (2001) 162 final). Biodiversity conservation also is a key target of the 6th EAP (Decision No 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme).

As emerged from the North Sea fisheries case study, implementation of the ecosystem approach has still to be fully achieved. The main threats for biodiversity in the North Sea can be easily linked to the narrow focus of management plans on objectives such as the growth of industrial fishery and the exploitation of oil and gas reserves (e.g., via accidental mortality of non-targeted fish species, extensive damage to the benthic habitats, pollution, intensive marine transport, etc.). Given this overexploitation of the provisioning services in the North Sea, the most important management tool, the Common Fisheries Policy (CFP) initiated in 1983 by the EU, was reformed in 2002 to enhance the ecosystem-based approach in fisheries management. In addition, a recent European Marine Strategy (EMS) promises to bring new measures to protect and conserve the environment. While it is too early to say whether the reformed CFP in 2002 and the recent establishment of the NSRAC will decrease the factors that threaten the sustainability of the fisheries in North Sea, it can be stressed that environmental and biodiversity aspects should be taken into consideration when developing multi-annual management plans.

Established evidence of the benefits of adopting a ecosystem approach in economic activities can be found in a comparison of organic agriculture versus intensive agricultural practices (which have negative impacts on biodiversity). Organic farming has beneficial impacts on the three tenets of sustainable development and both within and outside the agricultural landscape. Organic farms have higher biodiversity and habitat heterogeneity, and nutrient leaching is less abundant. The threat to water and land pollution are reduced due to lower pesticides and chemical fertilisers used, a greater care about closing the nutrient cycle and a greater care to reduce erosion. Economically, organic farming helps small farms to stay alive. Landscape with high rate of organic farms can display greater aesthetic value, which in turn influence the recreation and tourist opportunities (e.g. Bed and Breakfast operations, restaurant, shops, bike trails). Furthermore, organic farming offers a wider range of products that are sought after by tourists. These products can also be processed locally, providing different incomes. The main social impact is that organic farming maintains the viability of small farms and also diversifies the rural economy. This decreases local unemployment rates and rural exodus.

- ***There is a need to raise awareness on the value of biodiversity for socio-economic activities and on its impact on the quality of life for the European citizen***

From a recent survey of the Eurobarometer (Flash Eurobarometer 2007, Series #219, Attitudes of Europeans towards the Issue of Biodiversity, survey conducted by the Gallup Organization)



results that only 35% of European citizens know what biodiversity means. To achieve consensus on biodiversity conservation policies, besides explaining what biodiversity is, the next step is to raise awareness on the role of biodiversity in allowing ecosystems to provide environmental goods and services and therefore contributing to human welfare. From the North Sea fisheries case study, for instance, it resulted that, despite the evidence that good management of fisheries benefits mostly fishermen and the fishing sector, fishermen do not fully understand the benefits of biodiversity conservation as they seek to satisfy their economic demands in a short-term period. They simply cannot accept that fishing practices cause environmental destruction. On the other hand, fishermen receive advantages from the conservation of mammals that “compete” with them over fish stocks. As has emerged from the case study on North Fisheries, the message to be passed on is that greater numbers of species make an ecosystem more robust. In areas of high biodiversity, there are more species performing a certain function. If one is lost, there will be others that can fulfil the same role. For ecosystems to continue to provide environmental goods and services, richness in biodiversity is a fundamental component. Tangible examples of economic sustainability while conserving biodiversity shall also be proposed such as organic production, with its benefits for environment, health and the local economy (see the case study on organic agriculture in countries surrounding the Baltic Sea).

- ***Regulatory, economic and social/cultural tools are all necessary to achieve biodiversity conservation***

Where there are negative pressures on ecosystems and ecological functioning and in case of serious risks and emergencies (e.g. biotopes and species at risk of extinction), there is a need for regulations and environmental standards (e.g., Water Framework Directive, Natura 2000, etc.). Where markets can be exploited for conservation of biodiversity (organic agriculture, recreational activities) or quasi-markets can be created for exchanging a public good between entrepreneurs and States (e.g. site specific agri-environmental measures) then market tools will be also effective. From the case study on use of wild resources in the EU, it emerged that across recreational activities, decline in biotope quality was observed in countries with little generation of knowledge or appreciation of financial opportunities. The presence of many regulations and costs of complying with them was correlated with declining participation. Across recreational activities there was preference for regulations at national level accompanied by financial incentives at the local level (“national sticks but local carrots”). The analysis of recreational activities indicates that local implementation of economic measures and other use of local knowledge, as well as simple and non-burdensome regulations, are likely to result in effective conservation of wild species and the ecosystems that support them. The results provide quantitative support for recent commitments of parties to the Convention on Biological Diversity.¹⁰

From the case study on North Sea fisheries it resulted that while fishermen are required to reduce their income by reducing catches to obtain future benefits, few incentives are offered within the CFP: the policy is mostly based on restriction of activities. There are no market tools, in fact, and only a few independent eco-label schemes. In this case, overexploitation seems more profitable for the individual fisherman, leading to depletion of fish stocks. The case of organic agriculture around the Baltic Sea showed that social tools such as participative processes are very important to achieve biodiversity conservation. There is a need for discussion, collaboration and coordination to increase both vertical and horizontal trust.

¹⁰ *Malawi Principles for the Ecosystem Approach* (CBD V/6, CBD VII/11) <http://www.biodiv.org/doc/meetings/cop/cop-04/information/cop-04-inf-09-en.pdf>.
Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (CBD VII/12) <http://www.biodiv.org/doc/publications/addis-gdl-en.pdf>.



- ***Effective monitoring of biodiversity may require developing and adopting new monitoring tools also for governance***

Developing appropriate governance indicators [for instance “type” and quality-related variables to assess participation, perceived legitimacy, performance, accountability, etc.)] can allow to take on an “adaptive governance” mode and improve governance on the basis of related biodiversity impact. In order to halt the loss of biodiversity, along the identification of driving forces, pressures and impacts, it is also necessary to monitor the promptness and effectiveness of policy response. A clear message coming out from the case study on use of wild resources is that it is highly advisable to promote adaptive governance as well as adaptive ecological management, and perhaps Governance Impact Assessment and Strategic Governance Assessment mechanisms to complement the one existing for Environmental Impact Assessment and Strategic Environmental Assessment.



Part B - Policy Guidelines for EU development policy affecting governance of biodiversity in non-western third countries

The nine “non-western” Third Country case studies comprised in the GEM CON BIO project have been analysed qualitatively on the basis of an adapted questionnaire,¹¹ which emphasized considerations of particular relevance for conservation by indigenous peoples and local communities. The studies focused on how the type and quality of governance of natural resources, and their changes through time in the last fifty years or so, impacted upon local biodiversity. These studies are by no means unique and actually add to the extensive accumulated knowledge and experience of conservationists, development experts, indigenous peoples and community members who— for decades— analysed the benefits and limitations of processes of participation, devolution, co-management and outright community–run natural resource management and conservation.¹² The results we obtained broadly confirmed prior analyses while adding relatively new important considerations, in particular regarding “Community Conserved Areas”. We will briefly describe these results below, focusing on those that appear the most crucial for conservation and/or open up new and promising areas of inquiry.

Background

For millennia, indigenous people and local communities have played a critical governance role regarding natural environments and species. They did so for obvious sustenance reasons but also for a variety of other purposes— economic as well as cultural, spiritual and aesthetic. Communities cared for territories and resources that embed valuable biodiversity, ecological functions and socio-cultural meaning, including forests, wetlands, species and landscapes, village lakes and catchment forests, rivers and springs, coastal stretches and marine areas. The history of conservation and sustainable use by communities is much, much older than the one by state governments

Starting several centuries ago and progressively accelerating in the last two, **major changes in natural resource governance took place all over the world.** Prompted by technological innovations and the enclosure of the commons, these changes proceeded through colonisation, the establishment of nation states and colonial enterprises, and are now peaking with the globalisation of the world economy and the coming to dominance of a few superpowers and associated multinationals. In parallel, cultivated and urban land expanded at the expense of forests, rangelands, wetlands and wildlife habitats, market/ monetary values replaced use values, and the “science-based” decisions of experts, bureaucrats and merchants attempted to substitute the experience-based, culture-embedded production systems of communities and communal governance systems. A progressively smaller percentage of the population of given countries remained employed and/or in control of agricultural, fishery and livestock production. The energy and transportation sectors boomed and so did the financial and military sectors. In the last fifty years, tourism, telecommunication and information have also grown exponentially.

As part of the change described above, peasant communities have been progressively involved in cash crop production controlled by far-away decisions, nomadic pastoralists have been forced to sedentarise, hunters-gatherers have been constrained to become farmers and indigenous peoples’ and **community governance of natural resources, in general, has been**

¹¹ Borrini-Feyerabend, G. and B. Lassen, 2007, *GEM-CON-BIO Guidance Manual for Third Country Case Studies*, Adaptation of Terry and Simoncini GEM-CON-BIO Guidance Manual to Third Countries, on the basis of advice from field-based colleagues in Third Countries.

¹² A small selected bibliography is added in Annex 2.



overlooked, diminished or simply crushed in the name of modernisation and development. What consequences did this governance change bear for biological diversity? The “taming of nature” obtained spectacular results for the demographic expansion and development of the human species but it also left behind degraded soil and water, polluted air, resources depleted by excessive extraction (in particular in the seas, forests and rangelands) and a **sustained loss in biological diversity** (habitats, species, and genetic variety). Why then, still engaging resources to study the relationship between governance and biological diversity? For two main reasons:

The first reason is that **major forces exert their influence in the world of conservation and natural resource use by focusing precisely on governance issues**. Such forces have interests in depicting the world as “doomed” to widespread degradation to satisfy the world hunger for petroleum, gas, minerals, timber, fisheries, cattle, agricultural crops— and now biofuels. They have interests to confine nature within “protected areas” governed by professionalised agencies only. They have interests to commodify biological diversity through patenting, tourism enterprises and a purely economic “valuation” of ecosystem functions. And they have interests to eliminate the resistance of indigenous peoples and local communities by disaggregating them (e.g., through manipulative “education”, advertisements, and corruption) and denying their role in governing natural resources. **The tendency towards privatising land and natural resources throughout the world, limiting the scope of government regulations and relegating communal tenure to the realm of folklore belongs to one worldview and one class of interests that have little in common with conservation and equity.**

The second reason is that, if we observe closely throughout the world (in particular, but not exclusively in “non-western” countries) the governance systems of contemporary indigenous and local communities are syncretic¹³ constructions of old and new knowledge, practices, tools and values of different cultural origin.¹⁴ Such puzzles of hardly compatible elements are communities’ attempts to cope with new environmental conditions, market requirements, and tenure regulations imposed by the state. Building upon the characteristics of diverse political and economic contexts, unique combinations of indigenous and modern elements lead to diverse outcomes. Some indigenous system may be *de jure* completely replaced by state governance but *de facto* remain alive and effective (as in our Turkey case study) or change can be ruthless and powerful enough to affect the community’s capability to manage the local resources in a sustainable way (as in our Ethiopia case study), or apparently overpowering but unable to destroy the heart of the community livelihood system (as in our Iran case study). Eventually, innovative and more complex systems can develop by combining indigenous and modern elements (as in Niger and Mongolia and, to a certain extent, also in Indonesia and Iran, and partially even in Nepal). Large scale situations, such as the watershed landscapes of our case studies in Bolivia and Argentina, present elements of all the above. Thus, **on the overall background of many interlocked phenomena that negatively affect biodiversity, much can still be understood about the governance role of indigenous peoples and local communities and their possible cooperation with other actors and powers in society.** Studies as ours have a chance to understand how indigenous peoples and local communities can play a role in caring for biodiversity and what should be done to recognise and support them in appropriate ways, as shown in our case studies of Community Conserved Areas.

¹³ The term “syncretic” is used in religious and philosophical contexts to signify the merging of rather opposite positions, at times bordering on heresy.

¹⁴ See, for instance: Scott, J.C., *Weapons of the Weak. Everyday forms of peasant resistance*, Yale University Press, New Haven, Connecticut (USA) and London, 1985; and Scott, J. C., *Seeing Like a State. How certain schemes to improve the human condition have failed*, Yale University Press, New Haven, Connecticut (USA) and London, 1998.



Governance of biodiversity

One of the main messages coming from the 2003 World Parks Congress and the 7th Conference of the Parties of the Convention on Biological Diversity is that the interests and concerns of indigenous peoples and local communities are likely to be compatible with the conservation of biodiversity if and when fair, effective and participatory governance mechanisms are in place. Two main aspects of PA governance: 1. type and 2. quality (the so-called “good governance” principles) have been examined in the literature and at the Durban Congress.¹⁵ In line with such understandings and defined on the basis of “*who holds de facto management authority and responsibility and can be held accountable according to legal, customary or otherwise legitimate rights*”, five main types of governance¹⁶ have been discussed as part of the GEMCONBIO case studies in non western Third country, as follows:

- Government-based
- Shared governance
- Community governance
- Private governance
- Open Access

Community Conserved Areas (CCAs) is a broad term used internationally covers one such governance type, characterized by local collective *de facto* (and possibly *de jure*) authority, responsibility and accountability for the key decisions affecting biodiversity conservation and the use of natural resources.¹⁷ On the ground, CCAs comprise natural and/or modified ecosystems containing significant biodiversity, ecological services and cultural values, voluntarily conserved by (sedentary or mobile) indigenous peoples and local communities through customary laws or other effective means. CCAs can include ecosystems with minimum to substantial human influence as well as cases of continuation, revival or modification of traditional practices or new initiatives taken up by communities in the face of new threats or opportunities. Several of them are inviolate zones ranging from very small to large stretches of land and waterscapes. Three features are important:

- One or more communities closely relate to the ecosystems and species culturally and/or because of survival and dependence for livelihood;
- The communities are the major players in decision-making and implementation regarding the management of the site, implying that community institutions have *de facto* capacity to enforce regulations (in many situations there may be other stakeholders in collaboration or partnership, but primary decision-making is with the communities).
- The community decisions and management efforts lead to conservation of habitats, species, ecological services and associated cultural values (though the conscious objective of management may be livelihood, water security, safeguarding of cultural and spiritual places).

The GEMCONBIO case studies in non western Third Countries comprise six cases where fifty to one hundred years ago well functioning CCAs were undoubtedly in place. These include Turkey, Iran, Ethiopia, Niger, Mongolia and Indonesia. Regarding Nepal the situation was a bit more complex, with several indigenous communities’ lands co-existing in the case study area with a private hunting reserve of the king. The Bolivia and Argentina cases are at a larger scale,

¹⁵ The first attempts at establishing a governance typology for protected areas were made by Borrini-Feyerabend *et al.* (2002) and Graham *et al.* (2003) in preparation for the Vth World Parks Congress (Section 3.1). These attempts were discussed and refined at the Congress, where delegates settled on a set of protected area governance categories based on answers to the following questions (Borrini-Feyerabend, 2003): Who holds main decision-making authority for the protected area? Who is responsible and can be held accountable for it?

¹⁶ For the definition of “governance”, please refer to pages 4 and 5 of this document.

¹⁷ Borrini-Feyerabend, Kothari and Oviedo, 2004a.



but surely also included, fifty to one hundred years ago, examples of well-functioning CCAs. Since then, as mentioned in the introduction, **the governance changes that took place acted mostly to diminish the role of indigenous peoples and local communities in all our case study areas.** In the name of modernisation and development, governments appropriated communally held lands and either distributed them through processes of privatisation or established protected areas under their direct control. **Overall, the results upon biodiversity are negative.** And yet, if we strive to eliminate the complex influences of many other factors which exerted their influence side by side the governance changes, if we look at the details of individual cases and if we take into consideration some recent tendencies at arresting if not inverting the process of community loss of authority and responsibility on natural resources, we discover some interesting finer results. These will be summarised below.

Our results as recommendations for action

This note is dedicated to policy makers and decision makers. For that, we expressed the results of our case studies and overall analysis as directly and simply as possible. In particular, we extracted “lessons learned” and we transformed those, to the best of our ability, into recommendations for action.

- ***Recognise and respect customary institutions for natural resource management***

Functioning community governance institutions with roots on local culture and traditions are incomparable assets for the sound management of natural resources and conservation of biodiversity. State governments should take advantage of the value and contributions of such customary governance institutions. Allowing indigenous peoples and local communities to decide how to manage their resources and how to share the benefits of that management through local institutions, with a fair amount of autonomy, appears to both sustain livelihoods and conservation of biodiversity. Traditional governance institutions include local knowledge, skills, organizations, rules, values and worldviews tailored through time to fit the local context. A major characteristic of such institutions is that they typically relate to collective rights and communal tenure. If a government decides to recognize such institutions, two options are possible: supporting them and leaving them a fair amount of autonomy regarding the management of their territories and resources (this would amount to recognizing and promoting Community Conservation Areas - CCAs) or engaging them in developing and implementing natural resource management agreements and setting up joint decision-making bodies (this would promote shared governance settings, such as they exist for so-called co-managed protected areas). It is important that governments recognize customary governance institutions without trying to mould them into some blueprint institutional shape and form, including by imposing democratic practices such as “electing” local leaders to “run” CCAs. What they may wish to promote— although with great attention and care and not as part of imposed packages – are self-reflection exercises, including analyses of issues of transparency, equity and accountability.

- ***Help such institutions to fend off and/or discipline destructive “development”***

In all the case studies we examined, the most powerful forces at odd with conservation are the ones of business and so-called “development”. Environmental degradation and pollution invariably relate to large scale infrastructures and urbanisation, timber concessions, large plantations (e.g. oil palm plantations), intensive ranching and agribusiness (e.g., soy monocultures), legal and illegal trade, oil and gas industries and mining.¹⁸ Usually, business

¹⁸ At the time of this writing, biofuel plantations are increasing posing major biodiversity risks worldwide.



enterprises (and even large scale government projects) penetrate rural areas fast, without even attempting to properly study, prevent or mitigate their destructive social and environmental consequences. Beside direct impacts (e.g. because of habitat loss) a variety of indirect impacts (e.g., uncontrolled hunting related to new market demands) soon act to decimate wildlife. And the disruption of traditional livelihoods, migration fluxes and monetization of the economy fuel short-term, unsustainable uses of land and natural resources. These forces appear to be overpowering even when the state manages to set aside some “protected areas” to salvage at least part of the natural resources. Many such protected areas do not fend off exploitations and, when they do, they still need to face transformed, crowded, conflict-ridden and much less benign societies all around them. Traditional institutions and civil society in general are poorly organized to deal with such “development” forces in tandem with the politico-military might of the state. If they can form alliances with the governmental agencies with responsibility for conservation, however, they can become more effective in demanding safeguards and rules.

- ***Foster alliances between local, traditional institutions governing natural resources and the governmental agencies in charge of conservation***

Governmental action that complements and supports the governance efforts by indigenous peoples and local communities is a powerful, potentially unbeatable combination for positive change. Given the differences in perceptions and socio-political power of governmental agencies and communities, efforts are usually required to provide a neutral forum for negotiation and equitable process. For that, all actors, including state agencies, can benefit from capacity building and third parties, such as NGOs, can provide invaluable help through trainers, facilitators and mediators. Negotiating management solutions is a permanent on-going process that grows with the sense of confidence and trust among the parties involved. Trust, in turn, takes time to build and investments in social communication activities from the outset and through time. Flexibility and the initial investment of time and resources are thus central to community engagement in natural resource governance. But it is crucial to recognize that **governmental agencies and communities can** combine their mutual strengths, compensate their mutual weaknesses, and **develop effective and resilient shared governance systems**. The Mongolia site appears a particularly good example of this, but Niger, Indonesia and to a certain extent also Iran, are cases in point. In general, wherever historical processes add layers of complexity to local socio-cultural realities and wherever many and diverse actors find themselves claiming rights and/or having major interests on the same natural resources, shared governance settings offer an option of choice for biodiversity conservation.

- ***Adopt a landscape approach to natural resource management and conservation***

A fundamental lesson to derive from all our TC cases is that sound natural resource management and conservation cannot do without a landscape view and approach.¹⁹ What does that mean? From afar, biodiversity conservation can be comfortably imagined as a practice confined to some limited pockets in the territory, so called protected areas. But wildlife, water, air, pollen, insects, animals and people move. They are quick to link the protected area and its surroundings in a myriad of ways. Pervasive phenomena, such as fire, rain or climate in general, can be even more powerful. And even large and well-managed protected areas need to fit within socio-political contexts in which they may be supported and well funded or

¹⁹ Beresford, M. and A. Phillips, “Protected Landscapes: A Conservation Model for the 21st Century”, The George Wright Forum 17(1): 15–26, 2000; Brown, J., N. Mitchell and M. Beresford, The Protected Landscape Approach, IUCN, Gland (Switzerland) and Cambridge (UK), 2005.



undervalued and starved.²⁰ In other words, there is no viable alternative to the harmonious fitting of protected areas into a supportive environment (in French this begins to be called “ecological solidarity”). This is true for what concerns **biological connectivity and the maintenance of ecosystem functions** (e.g. water flows, wildlife corridors, protection of microclimates) but also for what concerns **excellent communication, support and functional linkages among governance structures at various levels**. All TC studies fit this recommendation, but in particular Ethiopia, Argentina and Bolivia, and to a large extent also Iran, Nepal, and Indonesia.

- **Support participatory action research, community-based analyses and learning by doing**

On-going learning processes, for example facilitated through Participatory Action Research exercises and community-based analyses, are powerful tools to improve biodiversity governance and equity. The opportunities to learn can be optimized through a variety of direct exchanges, including field visits and workshops, community-to-community visits, links to on-going information and trainings/capacity building events. Particularly useful are also multi-stakeholder fora, where different groups (including the ones usually marginalized) can exchange ideas, discuss options to combine livelihoods and conservation initiatives, and identify the support needed for that at various levels. These processes of active social communication can be very powerful and bring various parties to understand each other and be willing to negotiate. All in all, the time invested in bringing people together and giving them **the ‘luxury’ of discussing together on the basis of good information** has proven itself in a variety of contexts, including the ones of our TC case studies (see Niger, Mongolia, Indonesia, Iran, Argentina and Bolivia). Noticeably, not only the local communities need to strengthen their capacity to interact with others. Government staff can also greatly benefit, provided a minimum of continuity is assured in their status and site of employment.

- **Promote fairness in sharing the costs and benefits of conservation**

Local communities face a variety of struggles and constraints for survival but also for their positioning as actors and consumers in changing societies. Not surprisingly, the TC case studies show that communities appear to be more directly supportive and engaged in conservation whenever they experience direct benefits from their efforts. This includes financial benefits but also a variety of other cultural, spiritual, and livelihood-related benefits, which can be as, if not more, important than financial gains for the communities at stake. When the conserved biodiversity generates monetary benefits (e.g., entry fees for a protected area, local jobs, compensations for maintaining ecosystem services, etc.), these should be fairly shared among and within the relevant communities, with due attention to the legitimacy and credibility of the organizations representing them. New organizations, which poorly fit the local socio-cultural reality, can lead to elite capture and enhanced equity problems through the marginalization of weaker components of society (such as indigenous peoples, the poor, or women). This can lead to negative consequences for conservation, as marginalized groups become angry and frustrated. Non monetary benefits from direct conservation engagement include increased food and livelihood security, sustainable water availability, access to training, the possibility to participate in exchange visits, social recognition, pride, enhanced sense of

²⁰ For instance, promoting cotton plantations up to the border of a protected area may undermine its sustainability in a variety of interlocked ways (e.g., pumping of underground water, discharging of toxic effluents, engineering of local societies for outside needs, local penetration of users and market forces, creation of pockets of extreme poverty, exhaustion of local soil after just a few years of cotton cultivation, creation of sure future demands for lands two steps from land left under uses perceived as unproductive, etc.).



community identify and solidarity, and the like. These benefits are very important, as they contribute to develop **social cohesion behind conservation activities and results**.

- **Ensure both sound local governance and a supportive policy environment, including the respect of basic human rights**

Sound local governance is a necessary but not sufficient condition for equity and the conservation of biodiversity. The viability of these goals is also depending on a firm and consistent political will and the commitment to supportive policies on the part of governmental authorities. Conversely, however, good policies and laws do not necessarily correlate with conservation of biodiversity and equity. Without effective implementation of those laws and sound governance at the local level, they are not enough. Good governance at municipal and sub-national levels is also crucial, as the positive potential of laws and policies can be lost through corruption, short-term interests, clientelism, and lack of capacity (including technical capacity) to implement the policies and monitor their functioning and results. At best, local governance and broader policies fit and are mutually supportive (many coercive mechanisms established through laws are simply rejected by local people). The constitutional/ regulatory framework of countries appears to require particular attention. Tenure systems, environmental impact assessment regulations, water rights, pasture rights, forest-related rights, but also basic socio-political rights, including the right to participate in political life, freely organize and demand transparency, performance and accountability from agency staff and elected officials, appear to make up for **the supportive environment that allows local governance to deliver its promises**. As shown by the case studies in Bolivia, Argentina and Iran, effective institutions from the local up and cross-scale communication and collaboration are necessary for large management units (e.g., a watershed landscape, a transhumance territory) to flourish.

Specific recommendations for EU Development Policy

The Third Countries represented in this study are all recipients of EU Development Aid. As a major donor, the EU has significant influence on the governance of biodiversity in partner countries. It can even be argued that— through its projects and programmes and its general development policy— the EU is a governance actor in the complex settings affecting the conservation of biodiversity and the management of natural resources in aid recipient countries. This is especially true in countries where governments lack sufficient resources and capacity to conserve biodiversity on their own, and are strongly influenced by aid flows in shaping and implementing their own policies. The recommendations below are tailored around the specific mechanisms of EU Development Policy and designed to reflect and support the lessons summarised above.

- **Aid programming: take full consideration of indigenous and local institutions for the governance of biodiversity in Country Environment Profiles and Country Strategy Papers**

Aid programming at the country level should take full consideration of customary forms of biodiversity governance, such as Community Conserved Areas, in Country Environment Profiles (CEPs). The overall governance settings of conservation should be assessed, including community governance and its interaction with other, state-based governance forms. One of the purposes of CEPs is to link environmental issues to social and economic aspects. They should therefore explicitly explore the cultural and livelihoods significance of biodiversity and the traditional links of local communities and indigenous peoples to natural resources, together with



the equity aspects of biodiversity conservation. The very writing of CEPs should be a participatory process, with the requirement of involving civil society. Similarly, participatory processes are essential in drawing up and reviewing Country Strategy Papers (CSPs). If “environment” is there determined as a priority sector, the implementation strategy should be based on the findings of the CEP and take into account local realities, including cultural and equity aspects.

- ***Aid delivery: engage community institutions in detailed planning as soon as political engagements have been taken, aid objectives set and financial envelopes assigned***

Our case studies have shown the value of local institutions, practices and resources for the governance of biodiversity and the conservation successes of indigenous peoples and local communities. In general, as soon as the parties prescribed by existing legislation and procedures have taken political engagements, set broad aid objectives and assigned financial envelopes, it is recommended that the relevant strategies, activities, detailed budgets and action plans of programmes and projects are fully developed at the local level through participatory processes that engage all the actors expected to take an active role in the implementation of the activities and plans. It is at this moment that the traditional institutions that govern natural resources at the community level become extremely important and should be actively engaged. For that, sufficient time and resources should be budgeted, and qualified staff should be available to promote and facilitate participatory processes, ensure cultural sensitivity, promote equity in participation and help the parties evaluate the feasibility of their plans. This is likely the single most important recommendation for the success of any conservation and development initiative and it is surprising that, at this day and age, after so many conservation and development disasters and squandered resources, it is still necessary to stress this point.

A significant way in which the EU can follow the above and promote community governance of natural resources is by supporting processes of participatory action research and community-based analyses. Action should be upon the specific demand of communities, and support should remain community-driven, but even in cases when the EU negotiated an aid package on a given broad objective at national level, it should foresee time and resources to finalise the planning at the local level. In general, capacity-building initiatives can make a significant contribution, targeted at local communities but also at government institutions, which often lack experience in collaboration with indigenous peoples and local communities. Multiple advantages can be expected, including local ownership and engagement and the better use of traditional knowledge. Local communities often have a sophisticated understanding of the ecosystem dynamics around them, which are still not sufficiently valued. For example, when environmental baseline studies are performed, these should be carried out jointly between local communities and outside researchers. In general, genuine and transparent participation processes should be sought throughout the project cycle. Far too often, however, participation is still understood as a token “consultation” exercise at the beginning. The EU should simply not approve projects that have not undergone local analysis and assessment and that do not foresee the ongoing role of key local actors, such as customary governance institutions, through culturally appropriate forms of dialogue and decision-making.

In case of governance settings that need to engage a multitude of actors, the EU as an “outside” actor could even venture to provide professional facilitators and neutral fora for dialogue, smoothing out power disparities among stakeholders. Negotiation for successful shared governance is a necessary, long term dynamic process based on the confidence among the parties. From the point of view of the facilitator, this means ensuring transparent, flexible and legitimate decision-making processes and structures (as opposed to preconceived “models” of collaboration) and being able to invest time and resources to the task.



- ***Aid delivery: provide direct support to community efforts to conserve biodiversity, including through small funds and rapid application, disbursement and accounting procedures***

Aid structures should be diversified to include more widespread forms of direct support to communities and community-based organizations. When supporting community governance of biodiversity it is crucial to respect existing customary institutions and to implement projects in partnership with those institutions instead of imposing new organizational models (such as “management committees”) designed by non-local project managers. Whatever their merits, organizational forms alien to the local context tend to perform poorly and may even lead to the destruction of customary institutions and damage the natural resources meant to be conserved. Local governance of biodiversity and phenomena such as Community Conserved Areas are rarely perceived as “projects” by the relevant communities. They are rather seen as part of their own livelihoods, lifeplans and social identity, and they are grounded in local history, language and meaning. A focus on inclusive processes is crucial. Again, time should be invested so that the relevant communities can assess their own situations and needs in an ongoing manner.

Direct support means that aid delivery mechanisms must be made accessible and adapted to communities as direct recipients: small funds and rapid disbursement procedures should be used for this, and application and accounting procedures simplified. Moreover, a process-oriented approach in aid delivery should be adopted in place of bureaucratic, result-oriented and schedule-driven approaches. This may imply accepting process oriented plans, and refraining from tight schedules and overly constraining blueprints. In general, short term, restrictive and overly precise project frameworks should open up to longer-term partnerships and flexible mechanisms, where learning and achieved the desired impacts are emphasized in place of accomplished activities and delivered outputs regardless of quality or local demand.

- ***Enabling policy environment: ensure the free, prior and informed consent of affected communities***

The EU can promote supportive policy environments to enable biodiversity conservation and equity in many direct and indirect ways. This is not the place to discuss the how, however, but rather the “what”. First and foremost, the free, prior and informed consent of affected communities should be an essential condition for the implementation of any development programme or project of the EU. Besides the need to recognise this on the ground of basic rights of self-determination of indigenous peoples and local communities, free, prior and informed consent is on line the principles established by the Aarhus Convention. Other key policies can comfort the results of our case studies and promote the local governance useful to support the conservation of biodiversity. Recognising communal property, securing land rights, recognising customary institutions, devolving decision-making and promoting transparent, open spaces for civil society to shape new laws and policies are all elements of a supportive and enabling policy environment for local governance. “Good governance” should also be supported, and at all levels. Indeed, good governance criteria could be made conditional to the financing of projects. Issues such as the lack of secure land rights in a project area have to be solved, as they are the basic conditions for successful governance of natural resources. For instance, transparency and accountability in hiring personnel and using resources could be included through several mechanisms, including the appointment of ombudspersons to deal with sensitive complaints related to programmes and projects.



- ***Environmental mainstreaming: engage local institutions in Environmental Impacts Assessment and Strategic Environmental Assessment processes***

Long-standing local conservation efforts may be threatened by externally-driven development initiatives, such as large-scale infrastructure, extractive industries, or the expansion of commercial agriculture. As the conservation successes of local communities still lack recognition, they are often not taken into account in planning processes. It is therefore crucial that local indigenous and community institutions are engaged in all the phases of Environmental Impact Assessment studies. The EU can ensure that Environmental Impacts Assessments and Strategic Environmental Assessments are systematically undertaken with the full participation of concerned indigenous peoples and local communities. These assessments should be as participatory as possible, and should include the analysis of impacts on biodiversity and associated cultural, spiritual and livelihoods values. This includes paying attention to policy reforms and how these impact biocultural diversity and local livelihoods. As apparent in our case studies, a significant threat to customary institutions and community governance of biodiversity stems from forced integration into “modern”, large-scale economies.



Further research needs identified

The case studies analysed in GEM-CON-BIO have been distinguished in three groups: a) those carried out in the EU and US; b) those focusing the analysis on a specific use of natural resources and biodiversity at national/international levels in the EU and in c) those carried out in non-western Third Countries. The use of the GEM-CON-BIO analytical framework to carry out case studies in different ecological, social, cultural, economic/financial and institutional situations led authors to a common understanding of the research tasks, facilitating consistent outcomes and enhancing their comparability.

As the number of case studies analysed was limited, we cannot safely extrapolate the results of the synthesis of case studies outcomes to a wider universe. It can be stressed; however, that **governance for sustainable development is a crucial theme for research and policy making, which should prominently feature in future research initiatives**. The analysis of case studies reports provides some indications on what aspects should be addressed by future research linking governance and biodiversity:

- The GEM-CON-BIO analytical framework initiated the process of developing and selecting a set of ecological, economic/financial, social, cultural, and institutional indicators and relative value ranking systems for understanding how governance type affect the conservation of biodiversity. This set of indicators should be further refined, agreed upon and adopted to assess that relationship at different levels and under a variety of settings and overall conditions. In particular, specific indicators of **governance quality** should be identified and assessed, with a preference for participatory assessment by the actors most directly concerned.
- Research should focus on ways to improve governance, including case studies where this has been attempted, to generate lessons, tools and recommendations for action in various settings.
- The influence of scale of drivers and governance levels needs also to be better assessed, e.g. through a) the impacts on biodiversity by drivers originated at higher spatial levels (e.g. global environmental changes like climate change) b) the impact of international/European policy (e.g. Common Agricultural Policy), c) the interactions between local and national/global governance levels and their effect on ecosystem management practices and biodiversity conservation.
- Especially for the interactions between local and national/global governance levels, the need for complex decision support is apparent. Policy makers need support to integrate knowledge that exists at the regional and local levels (e.g. numbers of species, biotopes quality, etc) into the decision making process, while local people need expert guidance to collectively maintain and restore these ecosystem services that are required at the national/global scale. Systems that link these two levels for the benefit of biodiversity should be examined.
- There is a need for further analysis on the impact of external drivers (direct and indirect) on biodiversity (e.g. the relationships between CAP and CFP and biodiversity conservation at local level).
- There is a need to identify and monitor economic indicators to understand how thriving or declining biodiversity impacts upon the European economy. Such indicators could be



promoted through a vehicle such as Eurostat, documenting how the contribution of biodiversity to the EU economy changes through time.

- There is a need to raise awareness among all levels (local, national, international) on the economic value of biodiversity and ecosystem services. Such value is provided by ecosystems in monetary terms (direct income), in life supporting services, in cultural / aesthetic / recreational services (e.g. tourism, bird-watching, hunting, etc). Such awareness could also be raised through the Eurostat survey suggested above.
- Further research on the status of biodiversity and the functioning of ecosystems should focus on ecological critical thresholds that ensure the sustainability of socio-economic activities.
- In-depth analyses are necessary about traditional, customary forms of biodiversity governance, their interaction with “modern” institutions, the factors for resilience of these institutions in the face of socio-economic change and the factors that affect their capacity to deliver decisions towards sustainability.
- Development of scenario analysis on the relationship between governance structures and conservation of biodiversity would facilitate communication of governance effects to the general public, and communication of problems and opportunities related to the management of ecosystems to the policy makers.
- The identification and documentation of best practices for conservation and sustainable use of biodiversity under different governance types and processes could enable the transfer of these best practices to wider contexts and areas. The linkage of such practices to Natura 2000 areas should be explored.
- Finally, given the very critical state of biodiversity at places worldwide, forthcoming major threats such as climate change and widespread introduction of invasive species, and the so far too slow reaction in policy development and implementation, it is highly advisable to promote research on governance and management of environmental, social and economic emergencies and on development of adaptation strategies.



Annex 1 - List of GEM-CON-BIO case studies

a) EU and US case studies analysing governance and ecosystem management at local/ecosystem level

1. Moritzburg small hill landscape, Germany
2. Moritzburg forest and pond area, Germany
3. Järna organic food system, Sweden
4. Kävlinge River Catchment, Sweden
5. Rönne River Catchment, Sweden
6. Gullmar Fjord Catchment, Sweden
7. Macin Mountans National Park, Romania
8. Danube Delta Biosphere Riserve, Romania
9. Rhon Biosphere, Germany
10. Schorfheide-Chorin Biosphere Reserve, Germany
11. Main, habitat Programme, U.S.
12. N.Y. Watershed, U.S.
13. Lake Kerkini, Greece
14. Velka Fatra, Slovakia
15. Chianti Classico, Italy
16. Közép-Tisza Landscape, Hungary
17. Só út area, Hungary

b) Case studies analysing governance and ecosystem management at national and international levels in EU

18. Organic Agricultural production in Countries surroundings the Baltic Sea.
19. North Sea Fisheries
20. Use Nationally of Wildlife Resources across Europe – Governance, Value and Trends

c) Non-Western case studies analysing governance and ecosystem management at local/ecosystem level

21. Danau Santarum National Park, Indonesia
22. Parapeti River Basin, Bolivia
23. Agro-sylvo-pastoral Community Conserved Areas, Zinder Region, Niger
24. Borana-Oromo Community Conserved Landscapes, Ethiopia
25. Gobi Gurvan Saikan National Park, Mongolia
26. Shahsevan Community Conserved Rangeland Territories, Iran
27. The Camili Biosphere Reserve, Turkey
28. Pilcomayo Trinational River Basin, Argentina
29. Buffer zones of Chitwan National Park, Nepal



Annex 2: References Part B, and selected readings on local governance of natural resources and biodiversity

- Banuri, T. and A. Najam, *Civic Entrepreneurship. A civil society perspective on sustainable development, Vol. 1: a global synthesis*, Stockholm Environment Institute, UNEP and RING, Gandhara Academy Press, Islamabad, 2002.
- Barraclough, S. L. and M. Pimbert, *Property Rights and Participation in Natural Resource Management*, International Institute for Environment and Development, London and UNRISD, Geneva (Switzerland), 2004 (in press).
- Berkes, F. (ed.), *Common Property Resources. Ecology and community-based sustainable development*, Belhaven Press, London, 1989.
- Borrini-Feyerabend, G., T., Banuri, T., Farvar, K., Miller and A. Phillips, "Indigenous and local communities and protected areas: rethinking the relationship", *Parks*, 12, 2: 5-15, 2002.
- Borrini-Feyerabend, G., "Governance of protected areas: innovation in the air...", *Policy Matters*, 12: 92-101, 2003.
- Borrini-Feyerabend, G., A. Kothari and G. Oviedo, *Indigenous and Local Communities and Protected Areas. Towards equity and enhanced conservation*, IUCN/WCPA Best Practice Series, 11, Gland (Switzerland) and Cambridge (United Kingdom), 2004a.
- Borrini-Feyerabend, G., M. Pimbert, M. T. Farvar, A. Kothari and Y. Renard, *Sharing Power: Learning-by-Doing in Co-management of Natural Resources throughout the World*, IIED and IUCN/CEESP/CMWG, Cenesta, Teheran, 2004b (reprinted Earthscan, London 2007).
- Brechin, S.R., P.R. Wilhusen, C.L. Fortwangler and P.C. West (eds.), *Contested Nature. Promoting international biodiversity with social justice in the twenty first century*, State University of New York Press, Albany, New York (USA), 2003.
- Bromley, D.W. and M. Cernea, *The Management of Common Property Natural Resources. Some conceptual fallacies*, World Bank Discussion Paper 57, Washington D.C., 1989.
- CGIR, *Uniting Science and Participation for Sustainable Livelihoods and Adaptive Natural Resource Management*, Earthscan, London, 2003.
- Chatty, D. and M. Colchester (eds.), *Conservation and Mobile Indigenous Peoples. Displacement, forced settlement and sustainable development*, Volume 10, Studies in Forced Migration, Berghahn Books, Oxford (United Kingdom) and New York, NY (USA), 2002
- de Sherbinin, A. (ed.), *Establishing and Strengthening Local Communities' and Indigenous Peoples' Participation in the Management of Wetlands*, Handbook No. 5 for the Wise Use of Wetlands, Ramsar Convention Bureau, Gland (Switzerland), 2000.
- Dudley, N., L. Liza Higgins-Zogib and S. Mansourian, *Beyond Belief*, WWF International, Gland (Switzerland), 2005.
- Durning, A.T., *Guardians of the Land. Indigenous peoples and the health of the earth*, Worldwatch Paper 112, Worldwatch Institute, Washington, D.C., 1992.
- Estrella, M. and N. Iszatt (eds.), *Beyond Good Governance. Participatory democracy in the Philippines*, Institute for Popular Democracy, Quezon City (The Philippines), 2004.
- Franke, R.W. and B. Chasin, *Seeds of Famine*, Landmark Studies, Universe Books, New York, NY (USA), 1980.
- Fung, A. and E.O. Wright, *Deepening Democracy. Institutional innovations in empowered participatory governance*, Verso Books, London, 2003.



- Ghai, D. and J.M. Vivian (eds.), *Grassroots Environmental Action*. People's participation in sustainable development, Routledge, London, 1992.
- Ghimire, K. B. and M. P. Pimbert (eds.), *Social Change and Conservation. Environmental politics and impacts of national parks and protected areas*, UNRISD, Geneva (Switzerland) and Earthscan, London, 1997.
- Graham, J., B. Amos and T. Plumptre, *Governance principles for protected areas in the 21st century, a discussion paper*, Institute on Governance in collaboration with Parks Canada and Canadian International Development Agency, Ottawa, 2003.
- Jaireth, H. and D. Smyth, *Innovative Governance*, Ane Books, Delhi, 2003.
- Mayers, J. and S. Bass, *Policy that Works for Forests and People. Real prospects for governance and livelihoods*, Earthscan, London, second edition, 2004.
- Murphree, M., "Common property, communal property and open access regimes", pages 59-61 in vol. 2 of Borrini-Feyerabend, G. (ed., with D. Buchan), *Beyond Fences. Seeking social sustainability in conservation* (2 vols: 'Process Companion' and 'Reference Book'), IUCN, Gland (Switzerland) and Cambridge (United Kingdom), 1997.
- Ostrom, E., *Crafting Institutions for Self-Governing Irrigation Systems*, Institute for Contemporary Studies Press, San Francisco (California), 1992.
- Pimbert, M.P. and T. Wakeford (eds.), *Deliberative Democracy and Citizen Empowerment*, Special Issue of PLA Notes, no. 40, IIED, London, 2001a.
- Pimbert, M.P., *Seeking Transformation. Institutionalising participation and people centred processes in natural resource management*, IIED-IDS Institutionalising Participation Series, International Institute for Environment and Development IIED, London, in press (2004).
- Posey, D.A. (ed.), *Cultural and Spiritual Values of Biodiversity*, UNEP, Nairobi and Intermediate Technology Publications, London, 1999.
- Pye-Smith, C. and G. Borrini-Feyerabend with R. Sandbrook, *The Wealth of Communities*, Earthscan, London, 1994.
- Reader, J., *Man on Earth*, Penguin Books, London, 1990.
- Ribot, J.C., *Democratic Decentralisation of Natural Resources*, World Resources Institute, Washington D.C., 2002.
- Ribot, J.C., *Waiting for Democracy*, WRI, Washington DV, 2004.
- Stevens, S. (ed.), *Conservation through Cultural Survival*, Island Press, Washington D.C., 1997.
- UNDP, *Human Development Report 1999— Globalisation with a Human Face*, United Nations Development Programme, New York, NY (USA), 1999.
- UNDP, *Human Development Report 2002— Deepening Democracy in a Fragmented World*, United Nations Development Programme, New York, NY (USA), 2002.
- UNDP, UNEP, WB and WRI, *The Wealth of the Poor*, WRI, Washington D.C., 2005.
- Watts, M., *Silent Violence*, University of California Press, Berkeley, California (USA), 1983b.
- Western, D. and R. M. Wright, *Natural Connections*, Island Press, Washington D.C., 1994.
- Whande, W., T. Kepe and M. Murphree, *Local Communities, Equity and Conservation in Southern Africa*, PLAAS, Africa Resources Trust and TILCEPA, Cape Town (South Africa), 2003.
- WRI, *World Resources 2002-2004—Decisions for the Earth: Balance, Voice and Power*, United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), the World Bank and WRI (World Resources Institute), Washington DC, 2003.



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GEM-CON-BIO explored the interactions between ecosystem management and biodiversity. Aim was to identify which processes and institutions may best contribute to the conservation of biodiversity and thus to the maintenance of ecosystem services.

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