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The Convention on Biological Diversity as a legal framework for safeguarding ecosystem services

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ABSTRACT

Biodiversity underpins ecosystem services. The UN Convention on Biological Diversity (CBD) has adopted an ecosystem services approach as a framework for biodiversity management at the national level. Protection of ecosystem services requires far more than traditional nature conservation measures like the designation and management of protected areas. The economic sectors that affect biodiversity and ecosystem services must be involved, to address not merely the symptoms but the root causes of the degradation of biodiversity and ecosystem services. Achieving coherence in policies and actions across economic sectors and the changes involved in values, decision-making and practices, requires legal approaches to ensure buy-in and accountability. Ideally, such approaches should be included in National Biodiversity Strategies and Action Plans (NBSAPs), the key instrument for translating the CBD into national action. A review of 20 revised NBSAPs shows that such measures have been introduced only to a very limited extent with many countries still in the earliest stages of preparing measures to protect ecosystem services. Thus, there is a need for further research and practical guidance regarding legal approaches to ecosystem services.

1. Introduction

The concept of *ecosystem services* (ES) expresses the 'usefulness' of nature in terms of providing for basic human needs, like food, fuel and, medicines, clean water, flood control and climate regulation. ES are essential to human well-being. As their continued degradation has a disproportionate effect on poor people, ES is a key concept in the context of sustainable development.

The concept was brought into widespread use by the UN initiative *the Millennium Ecosystem Assessment* (MA) published in 2005. The MA also points to the importance of biodiversity for the provision of ES. This has led to the integration of the ES concept in many policies and initiatives to protect biodiversity at the national and international levels. Most notable here is the UN Convention on Biological Diversity (CBD) which in 2010 adopted the following Vision for its Strategic Plan: 'By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people'; and the following Mission: 'to take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication' (Decision CBD/COP/X/2). This makes the CBD a global framework for national-level action to protect not only biodiversity *per se* but also ES.

This again raises the question of what the legal implications are of such an 'expanded' scope of the CBD - implications that may be far-reaching given the holistic, cross-cutting character of ES protection compared to a more traditional nature conservation approach. The aim of the article is to explore and raise attention on this issue that has remained largely unaddressed by the CBD, national governments and legal scholars. In doing so, the article will address the following questions:

- What is the relation between biodiversity and ecosystem services* (Section 2)
- In what way has the CBD embraced the concept of ecosystem services* (Section 3)
- What legal approaches to the ecosystem services approach can be identified* (Section 4)
- In what way and to what extent have CBD state partiers addressed legal approaches to ecosystem services in their national implementation of the CBD* (Section 5).

Section 6 concludes on and discusses the findings. Throughout, the article deals with the gaps in knowledge on the exact relation between biodiversity and ES, and concerns for linking the two concepts, as possible obstacles to applying an ES approach to biodiversity management.

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2. What is the relation between biodiversity and ecosystem services*

The 2005 UN Millennium Ecosystem Assessment (MA) identified ecosystem services as the benefits people obtain from what nature can provide, (Millennium Ecosystem Assessment, 2005) and divided such services into four categories:

1. *Provisioning services:* products obtained from ecosystems, such as food, fresh water, fuelwood, fiber, biochemical and genetic resources.
2. *Regulating services:* benefits obtained from regulation of ecosystem processes, such as regulation of floods, drought, disease, land degradation and water purification.
3. *Supporting services:* services necessary for the production of all other ecosystem services, such as soil formation, nutrient cycling and primary production.
4. *Cultural services:* non-material benefits from ecosystems, such as esthetic enjoyment. recreation and tourism, inspiration for culture art and design, and spiritual experience.

The concept of ecosystem services has increasingly been seen in close connection with biodiversity widely described as *underpinning* ecosystem services. Biodiversity is seen as contributing as a regulator of ecosystem processes (e.g., the role of insect species as pollinators and a large variety of predator species to reduce outbreaks of pests), (Lucas et al., 2014) as a final ecosystem service *per se* (e.g., varieties and breeds within the major species used for food and fiber that contain high levels of genetic diversity) and as a good to be valued in itself for its spiritual, educational, religious and recreational value (Gasparatos and Stevens, 2015). When elements of biodiversity are lost, ecosystems become less resilient: that is the prevailing view. Hence, the continued loss of biodiversity is assumed to have important implications for ecosystem services and thereby for current and future human well-being (Harrison et al., 2014).

The interlinkage between ES and biodiversity was further emphasized already in the title of the international initiative 'The Economics of Ecosystems and Biodiversity' (TEEB) launched in 2007 to draw attention to the global benefits of ecosystem services and biodiversity and the consequent costs of ecosystem degradation and biodiversity loss (TEEB website). Its principal objective is to mainstream the values of biodiversity and ecosystem services into decision-making at all levels. This is to be achieved through a structured approach to valuation that helps decision-makers recognize the wide range of benefits provided by ecosystems and biodiversity, demonstrating their values in economic terms and, where appropriate, suggesting how to capture those values in decision-making (TEEB website). TEEB has attracted considerable attention, and many countries have begun conducting TEEB-based assessments and studies of ecosystems and their services (TEEB, 2013). The establishment of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) in 2012 - often referred to as the IPCC for biodiversity and ecosystem services - further emphasizes the tandem relationship.

The close interlinkage between ecosystem services and biodiversity – sometimes leading to interchangeable use of the two terms – has come about even though this relationship is far from fully researched and understood. While research into the links increasingly demonstrates the vital role of biodiversity for ecosystems functioning, and thereby to the services they deliver, it also shows that the links are not always obvious and that there is a great variation in the exact relationship between biodiversity and each individual ecosystem service.

However, the interlinkage is also contested for on several grounds. One is ethical: the ecosystem services approach is criticized for its anthropocentric focus and 'commodification' of nature, perceived to be at the expense of the intrinsic value of nature above and beyond human needs (Schröter et al., 2014). Some see inconclusive evidence of a 'win–win' scenario for ES and biodiversity protection, and fear that a conservation approach based on ES will not safeguard biodiversity, but merely divert attention and interest (Science for Environment Policy, 2015). This concern can be seen in connection with the views of some scholars who see the ES approach as a way for better identifying what aspects of biodiversity are needed for human well-being, so that priority can be given to components of biodiversity with clear ecosystem services benefits, above biodiversity components where conservation is justified solely on the basis of ethical and/or cultural values (Willis and Kirby, 2015). In the same vein, it has been argued that an ecosystem services approach should be a tool for balancing 'pure' conservation concerns against social and economic concerns so as to better reflect the three components of sustainable development (Kistenkas, 2014). Still, the prevailing view among scholars is that an ES approach should and need not undermine policies designed to protect biodiversity for its own sake, and that the two approaches can be applied synergistically (Science for Environment Policy, 2015). Attention is drawn to the fact that the definition of ecosystem services also covers non-utilitarian cultural services such as the spiritual and esthetic value of a landscape.

In any case, as reflected above, biodiversity and ecosystem services are widely and increasingly viewed in conjunction. One reason is that the Convention on Biological Diversity has adopted an ES approach as a powerful human well-being rationale for protecting biodiversity, as further elaborated below.

3. In what way has the Convention on Biological Diversity (CBD) embraced the concept of ecosystem services*

The term 'ecosystem services' was not in use when the CBD was endorsed by heads of State at the UN Conference on Environment and Development in Rio de Janeiro in 1992, entering into force the year after. Still, the concept is implicitly covered in the text of this comprehensive convention.

In the negotiations leading to the CBD, representatives of developed countries argued for an instrument with a clear conservation strategy to protect species and habitats, using the same approach as earlier global nature conservation conventions. In contrast, representatives of developing countries sought – successfully – a focus on biodiversity as a prerequisite for meeting basic human needs and to ensure that the convention would not hinder their development and sovereignty (Neßhöver et al., 2015). This anthropocentric and utilitarian approach is reflected in the objectives of the CBD, which, in addition to the conservation of biodiversity, are the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilization of genetic resources (Art 1). This is also reflected in the first preambular paragraph in which Parties declare they are conscious of the 'ecological, genetic, social, economic, scientific, educational, cultural, recreational and esthetic values of biological diversity and its components.' Articles 6(b) and 10(a) call on Parties to integrate conservation and sustainable use concerns into national sectoral and cross-sectoral plans, programs and policies (later referred to as 'mainstreaming'), a further indication that the CBD is moving beyond a classical nature conservation – often site-specific – approach to a more holistic, cross-cutting approach. With this approach, and with its adoption at the Rio Summit alongside the adoption of the Climate Change Convention, Agenda 21 and the Rio Principles, the CBD has its roots in the global sustainability discourse (Neßhöver et al., 2015).

The CBD in 2000 adopted the 'Ecosystem Approach' (EA) as a strategy for the integrated management of land, water and living resources and as its primary framework for action (CBD/COP/V/6.). The approach is an integrated management approach to achieve the three objectives of the CBD and maintain healthy ecosystems as such - not only for their value for human livelihoods. Still, the EA has a strong