



## Introduction and overview to the special issue on biodiversity conservation, access and benefit- sharing and traditional knowledge

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### Abstract

The concept of access and benefit-sharing (ABS) in genetic resources as maintained by the Convention on Biological Diversity (CBD) aims at promoting the conservation of biodiversity and equity between the North and the South at the same time. Its implementation challenges various disciplines. First, from an economic point of view, designing efficient ABS provisions turns to be highly complex given its multi-task and multi-agent problem structure, and given the lack of evidence that the economic benefits drawn from the exploitation of genetic resources will suffice to fund the preservation of biodiversity. Second, from a legal point of view, the principles of the CBD are very general. Their proper implementation requires the design of new intellectual property rights and new liability regimes, which challenge the current legal doctrines and have complex interactions with pre-existing legal regimes. Third, from the perspective of political and management sciences, the implementation of the CBD raises the question of how to design institutional frameworks that enable both democratic decision making taking into account the interests of the diverse stakeholders at the global level and collective learning considering the fact that humanity is dealing with complex problems characterized by numerous dimensions and high uncertainties. This special issue assembles a set of papers dealing with these issues and questions.

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### 1. Implementation challenges of the Convention on Biological Diversity

In the first decade of implementation of the Convention on Biological Diversity (CBD) significant institutional innovations have been accomplished

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even though rather little progress has been made in reducing the loss of biodiversity so far. Therefore, current research is challenged by the thorough analysis of the process of implementation and its impacts on conserving biological diversity in the field. It is also asked to provide suggestions for the future implementation process.

The convention was a remarkable framework document focusing not merely on conservation but also on the sustainable use of genetic resources and the fair sharing of the benefits arising from them. In particular, the provisions concerning access and benefit-sharing (ABS) and the protection of traditional knowledge emerged as a hot topic of recent debate that calls for innovative solutions. In 2002, the international community has adopted the Bonn Guidelines as a voluntary framework to regulate the access to genetic resources and to provide suggestions for benefit-sharing arrangements at the national level. Following-up on this process, the last Conference of the Parties in February 2004 in Kuala Lumpur addressed the ABS issue and mandated a Working Group to negotiate a possible international regime on ABS in close cooperation with the working group on Article 8j dealing with traditional knowledge.

In this special issue, a series of papers has been assembled that emerged from three workshops organized by the guest editors in 2003 and 2004 in Paris, Berlin and Louvain-la-Neuve. They brought together scholars from different disciplinary backgrounds as well as practitioners and engaged them in debates on the challenges and prospects of the future implementation of the abovementioned objectives.

## 2. Theoretical and conceptual challenges

The concept of access and benefit-sharing in genetic resources promoted by the CBD poses some serious challenges for research. Indeed, it combines in one framework issues of conservation of biological diversity and issues of equity and property rights, which are usually dealt with in separate disciplines and debated in distinct political institutions. Hence, any progress on the implementation of this concept depends on furthering fruitful collaboration between disciplines and on organizing an effective monitoring

and evaluation process by a comprehensive set of relevant stakeholders.

This special issue aims at answering this challenge by adopting a broad perspective on access and benefit-sharing and involving different disciplines in the analysis of the interdependencies between the social, environmental and economic issues involved. Drawing upon disciplinary approaches from economic theory, legal science, political science and organizational theory, its core aim is to enhance our understanding of the existing and possible future arrangements and regulations to implement the CBD.

However, combining these issues also poses some specific challenges for the different disciplines themselves. Institutional innovations in the field of ABS such as public–private partnerships or legal provisions for the protection of traditional knowledge raise new questions that cannot always be addressed within the current theoretical frameworks. We see the following three main strands of new research challenges in this regard.

*First*, from an economic point of view, the ABS provisions of the CBD aim to provide new means for creating economic incentives for the conservation of biological diversity. These means include different types of partnerships and contractual relationships, involving both public and private actors (Swanson, 1999). Well studied examples are the so-called bio-prospecting agreements, which include provisions for benefit-sharing on newly developed products from genetic research (Dalton, 2004; Svarstad and Dhillion, 2000; Mulligan, 1999), and research agreements in international networks of botanical gardens for the exchange of biological resources (Ten Kate and Laird, 2002). Benefit-sharing is addressed through various mechanisms, such as up-front payments for in situ conservation provided in some contracts or provisions for technology transfer or institutional capacity building in the provider countries (Brush, 1998; Steinberg, 2001). These partnerships and contractual networks raise a set of theoretical and empirical questions for economic analysis, which need to be clarified for the purpose of building a cost-efficient access and benefit-sharing regime. From a theoretical perspective, the efficient design of contracts remains an open question since one faces situations in which contracts are multi-purpose—at least preserving biodiversity and valorizing natural resources – and often multilateral since

bioprospecting and biodiversity preservation do not involve only the firms from the North and the governments of the South, but also local communities and non-governmental organizations from both hemispheres. Incentive theory shows that there are generally no “first best” solutions to these multitask and multilateral contracting problems, which leads to explore alternative ways to design efficient incentive and governance mechanisms. Other aspects call for further exploration of efficient solutions, in particular the uncertainty about why, what and how to protect the uncertain market value of protected resources that do not guarantee sustainability of benefit-sharing agreements, and the difficulties to have contracts enforced due to discrepancies among legal regimes and institutions. From a more applied perspective, several additional questions arise: how to evaluate the economic efficiency of public–private partnerships? How to assess the most efficient allocation of the resources generated in the new partnerships in order to optimize the investment in conserving biodiversity? How to balance public and private funding and interests in the access and benefit-sharing regime? Innovative research combining traditional market analysis with institutional and ecological considerations is necessary in order to tackle these challenges effectively.

*Second*, on the level of the regulatory framework, the principles embodied in the CBD are still very general. The ongoing political debate on the drafting of more specific regimes on this basis shows the difficulty to combine the interests of the different parties involved. Moreover, from a legal perspective, the integration of issues such as the protection of traditional knowledge or the inclusion of certificates of origin in patent applications, poses a real challenge to the current legal doctrine. Two important sets of implementation measures are currently being considered in the international negotiations and can illustrate these debates. A first set of measures consists of the voluntary instruments for ABS codified in the so-called Bonn Guidelines (SCBD, 2003). A second set of measures is considered in the upcoming negotiations on a legally binding international regime on certificates of origin (Barber et al., 2003). The idea behind this instrument is to address the need for an international system for monitoring the flow of genetic resources. This can be done through instruments such as the disclosure of origin in patent

applications or a certificate of origin providing evidence that the genetic resources and related traditional knowledge were lawfully acquired.

Different conceptual issues are involved in these debates on the regulatory framework. One can think for example of the problem of defining “traditional knowledge” or the “origin” of a genetic resource (Posey and Dutfield, 1996). Other key problems arise from the conflicts between a mandatory or voluntary regime of certificates of origin and the provisions of the TRIPS agreement (De Carvalho, 2000). The different goals pursued in biocollecting for public purposes and bioprospecting for private also call for innovative solutions (Alexander, 2003). These issues require an evolution of the basic concepts involved in the regulation of the ABS regime, both within legal and political theory. These disciplinary advancements, however, also depend on our current understanding of the nature and the functioning of bio-genetic resources and the practices of exchange in genetic resources and thus depend on the results of a broader interdisciplinary dialogue involving the natural sciences.

*Finally*, the third perspective that will be dealt with in this special issue pertains the institutional framework for enabling learning in the international regime. At present, different stakeholders develop, in a decentralized manner, institutional policies in accordance with the regulatory and economic perspectives considered above. For instance, ABS policies have been developed in scientific research institutions and networks of ex situ collections (botanical gardens, microbial culture collections and germplasm collections) through the development of codes of conduct on a self-regulatory basis (Ten Kate and Laird, 2002). Similarly, private corporations have detailed their own policies in relation to ABS or have fostered the elaboration of national legislation in the provider countries. In addition, multilateral organizations also integrate ABS policies in their work program, such as the UNESCO Network of Biological Resource Centers (Watanabe et al., 2004) or the International Cooperative Biodiversity Groups coordinated by the US National Institutes of Health (Rosenthal, 2003). The involvement of a broad set of actors and the decentralized character of these institutional policies pose new challenges to the issue of stakeholder participation and the efficient governance of the regime. These challenges, which are also present in other fields of environmental governance, raise

questions such as: how to foster the emergence and diffusion of common knowledge on effective ABS policies? What can be the role and which are the conditions and limits of institutional learning in a situation of heterogeneity of the collective preferences? How to reconcile efficient and legitimate governance of the regime?

These questions on the institutional framework will be addressed by the papers of this special issue relying on recent developments in policy science, organizational theory and economic theory. However, they are also related to a more general aim of this special issue, which is to provide scientific expertise that can support the collective learning on the theoretical approaches mobilized in the economic and legal analysis of the ABS regime. We think that this collective learning can provide, in return, new insights on the effectiveness of alternative regimes and open up new possibilities for action.

### 3. Overview of the contributions

#### 3.1. Incentives of flexible governance

The first paper by *Margaret Polski* analyzes the fundamental economic and institutional issues connected with biodiversity, biological materials and bioprospecting. The main findings are, first, that biodiversity and biological materials are common pool goods and must be governed accordingly and, second, that research and development using biological materials is a dynamic, inter-temporal asset transformation process that has a mixed economic nature, which requires equally diverse and dynamic governance rules and processes. However, there are no blueprints for access and benefit-sharing: in addition to extensive consultations with a wide range of stakeholders, developing appropriate policy and regulatory solutions requires detailed empirical analyses of specific asset transformation processes in particular technological, cultural and institutional settings.

In their paper on the effectiveness of access and benefit-sharing in Costa Rica, *Carmen Richerzhagen* and *Karin Holm-Müller* analyze the national implementation of ABS in this country. On the basis of insights from new institutional economics, they identify critical factors that influence the effectiveness

of national legislation. Their application to the case study reveals, for instance, that the assignment of property rights and intellectual property rights as well as proper enforcement mechanisms are crucial for both, economic development and the conservation of biodiversity.

Can genetic resources be managed through the creation of a market? This question is addressed by *Michel Trommetter*. His paper examines the conditions for the existence of such a market and finds that the lack of information on the quality of biological resources and on their value on both the demand and supply sides only allow for an imperfect market. In conclusion, the paper states that a system of equitable access and benefit-sharing can give value to genetic resources of developing countries and promote a sustainable management of biodiversity. Moreover, such a system can also help to increase the social welfare of these countries in the context of sustainable development.

The paper by *Henner Simianer* applies a micro-economic perspective and discusses decision making in the conversation of livestock in agriculture. It starts out from the dual objective for national and international authorities to maintain breed diversity and to further single breeds of recognised value. The paper argues that decisions and conservation activities need to be coordinated on an international level. As a decision rule, livestock conservation should reflect the expected future value of the conserved set of breeds that accounts for both, breed diversity and the cultural or scientific value of specific breeds. On this basis, approximate decision rules for breed prioritisation can be given that build on the extinction probability of a breed and its marginal objective function.

#### 3.2. Analysis of the regulatory framework

In the paper by *Geertrui Van Overwalle*, different tools for protecting and sharing biodiversity and traditional knowledge are reviewed. Its aim is to cast the different contributions in this volume in a wider framework, by describing and evaluating the current intellectual protection systems as well as intellectual property-similar systems and protecting and sharing initiatives outside intellectual property systems.

The paper by *Jerzy Koopman* focuses on legal aspects of a regime on ABS with regard to traditional knowledge. Starting out from a reconsideration of the

possibilities and constraints of patent and other property regimes, he argues that the currently discussed new types of intellectual property rights to protect traditional knowledge are inappropriate for the reconciliation of the various interests involved. Nevertheless, he sees possibilities to move forward with a stepwise revision of the requirements for patentability of traditional knowledge.

The integration of the issue of the protection of traditional knowledge in the ABS regime poses a real challenge to the current legal doctrine. In his paper, *Noah Zerbe* analyzes the emergence of a legal framework for access to biodiversity, benefit-sharing and intellectual property in Africa. He argues that the African Union's model legislation for the protection of indigenous knowledge satisfies the needs and requirements of African states by balancing the monopoly rights of breeders against the rights of indigenous communities.

### 3.3. Institutional learning

*Bernd Siebenhüner* and *Jessica Suplie* analyze the implementation process of the ABS provisions under the perspective of institutional learning. It is shown that the first decade in the implementation process since the Convention's entry into force in 1993 has exhibited the ability of the international community and its organizations to learn collectively. However, the crucial challenges of the implementation process still lie ahead and the institutional learning has to prove its effectiveness.

How to foster the emergence of common knowledge on effective ABS policies? This question is addressed by *Valérie Boisvert*, *Armelle Caron* and *Franck-Dominique Vivien* from the broader perspective of the problem of the emergence of common norms in the biodiversity regime. Applying the concept of debated universes to this case, they argue for the need of a "convention"—commonly shared values, set of definitions, rules and norms—to define and enforce policies. They show that the Convention on Biological Diversity can be seen as an attempt to define such middle ground.

In the last paper of the special issue, *Tom Dedeurwaerdere* takes up the issue of learning in the economic and political institutions that constrain bioprospecting practices. Drawing upon insights from

new institutional economics and evolutionary economics, he argues that a more appropriate design for reflexive learning between the different stakeholders is necessary in order to go beyond the current insufficiencies of bioprospecting contracts. Proposals for reflexive learning in a global biocollecting society or an international rights registration mechanism could be a first step in that direction.

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