

Bioprospecting under the Nagoya Protocol: a conservation booster?

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This policy brief investigates the potential of bioprospecting to boost biodiversity conservation. Some proponents of access and benefit sharing (ABS) mechanisms believe that bioprospecting, if better regulated under ABS legislation and the Nagoya Protocol to the Convention on Biological Diversity (CBD), will incentivize and fund biodiversity conservation. By combining economic and legal analysis, we challenge this view. First, the Nagoya Protocol was not primarily designed to conserve biodiversity. Second, the provisions that call upon the Parties to allocate the advantages arising from bioprospecting towards the conservation of biodiversity are hortative in nature. Nevertheless, beyond its relatively narrow focus on the utilization of genetic resources and associated traditional knowledge (TK), the Nagoya Protocol can be helpful to empower stakeholders, whose rights, duties and responsibilities are crucial for the conservation of biodiversity.

BIOPROSPECTING CONTRACTS: DESIGNED FOR BIODIVERSITY CONSERVATION?

The economic argument: Incentives and funding for biodiversity conservation

Facing rapid biodiversity erosion in a context of insufficient public funding, policy-makers and civil society are now calling for market-based instruments (MBIs) to help conserve biodiversity. As one of these MBIs, bioprospecting contracts govern “the search for plant and animal species from which medicinal drugs and other commercially valuable compounds can be obtained” (English Oxford Dictionary). These contracts allow the providers and users of genetic resources (and associated TK) to agree on the conditions that regulate their access and the sharing of the benefits arising from their utilization.

On the one hand, this mechanism is expected to provide higher financial and other non-monetary incentives to resource providers with the view to supporting their biodiversity conservation efforts, as compared with alternative land-use options (e.g. timber production, intensive agriculture) which entail greater impacts on biodiversity. In this case, resource holders shall be endowed with clear rights over biodiversity, biocultural heritage and genetic resources.

On the other, the possibility to clearly define the ownership of intellectual property and other rights arising in the context of bioprospecting contracts may protect research results and products. In several countries, genetic resources that fulfill the statutory requirements can be protected for a limited period of time through patents – or, in case of new plant varieties, by plant breeders’ rights (PBR). This allows the private sector to appropriate returns on investments in biotechnology and plant breeding. Commentators therefore argue that the intellectual property right (IPR) system can provide incentives for investment in biodiversity-related prospecting activities.

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Counter-arguments: the economic and legal reality of the marketplace and IPRs

Studies have shown that the total economic value from bioprospecting activities (i.e. the size of the pie) is relatively low. For instance, Simpson *et al.* (1996) estimate that the maximum marginal value of biodiversity for pharmaceutical research across 18 selected biodiversity hotspots is low (US\$21/hectare). In many cases, bioprospecting activities are unlikely to generate substantial revenues and overcome the opportunity costs of biodiversity conservation. As a result, limited additional incentives can be generated. Yet, recent studies have also shown that biodiversity can be valuable. In the case of marine biotechnology, estimates predict that “undiscovered cancer treatments from marine organisms could be worth between US\$563 billion and US\$5.69 trillion” (Erwin *et al.* 2010). However, these figures should be interpreted with caution since they are based on heavy methodological choices and assumptions. In addition, the economic value arising from marine bioprospecting also concerns genetic resources from areas beyond national jurisdiction for which no benefit sharing mechanism is available (Vierros *et al.*, 2013, *in press*). In sum, the size of the bioprospecting pie may be limited or uncertain, especially when compared with the remarkable transaction costs associated with the negotiations of contracts.

Besides, international IPR rules are neither designed to protect indigenous and local communities’ (ILC) innovations nor to support the requirements of the CBD. The majority of industrialized user countries still does not provide for an obligation to disclose the origin of genetic resources and TK in patent and PBR applications. Thus, in user countries, companies and researchers may obtain exclusive rights over innovations based on genetic resources and TK without distributing advantages to the resource providers, since the former are not subject to monitoring measures to support compliance with ABS obligations. In this context, the latter, be it a country or a community, might not receive additional incentives to conserve biodiversity.

Redressing the imbalance? Domestic ABS requirements and their limitations

Several countries have implemented ABS-related requirements with the view to regulating the transfer and use of genetic material and preventing its misappropriation. If they were complied with, such ABS requirements could provide better incentives and funds for biodiversity conservation. However, the implementation of domestic legislation or regulatory requirements on ABS is legally

challenging for both provider and user countries. ABS requirements of a provider country are not extraterritorially applicable in a user country’s jurisdiction (Chiarolla, 2012) and the revocation of wrongful patents and PBR can be extremely difficult, time-consuming and expensive.

In this context, provider countries and ILC often find it difficult to obtain some benefits from technological and other applications that involve the use of their genetic resources and associated TK. Social scientists thus forecast a situation where ILC have few additional incentives to invest in biodiversity conservation. Nevertheless, this situation might be improved by the appropriate implementation of the Nagoya Protocol.

BIOPROSPECTING, ABS AND BIODIVERSITY CONSERVATION UNDER THE NAGOYA PROTOCOL

Fairness and equity at the forefront of the Nagoya Protocol

The Nagoya Protocol was adopted in October 2010. Its objective is “[...] the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components” (Article 1). According to this provision, the Protocol will indirectly contribute to the conservation of biodiversity. Instead, it directly aims at providing increased legal certainty and transparency with regards to ABS for users and providers alike. It also creates opportunities to recognize the rights of ILC over their genetic resources and associated TK. The Protocol opened for signature on February 2011 and it will enter into force three months after its 50th ratification¹.

Once it enters into force, Parties will be required to implement benefit-sharing obligations by adopting appropriate legal, administrative and policy measures for the utilization, within their jurisdiction, of genetic resources taken from another Party. Besides, Parties (in the exercise of their sovereign rights as provider countries) may require users to seek their PIC and to sign MAT for benefit sharing as a precondition for the grant of bioprospecting permits. Finally, Articles 15 to 17 of the Protocol set out crucial obligations for user countries. Namely, the latter shall ensure that users comply with the ABS requirements of the provider country from

1. As of November 2013, it has been ratified by 26 countries.

where the genetic resources and associated TK were accessed. For example, the draft EU regulation (2012/0278 (COD) as amended by the European Parliament on 12 September 2013) introduces a combination of new users' obligations, including due diligence obligations (Article 4) as well as measures for monitoring user compliance with ABS requirements (Article 7).

In sum, while the Protocol makes references to biodiversity conservation, fairness and equity in ABS implementation are sought first and foremost. Yet, the Protocol potentially helps enforcing rights over genetic resources and associated TK in user countries and improves transparency and clarity in the access legislation of provider countries. In turn, these measures could indirectly help to generate additional funds and incentives for biodiversity conservation at the national and local levels.

Unverified assumptions about the Nagoya Protocol and biodiversity conservation

At the national level, ABS requirements to share the potential value of genetic resources arising from bioprospecting activities through MAT may contribute to generating incentives and resources for national governments that can be allocated to biodiversity conservation. In particular, Article 9 of the Nagoya Protocol provides that "the Parties shall encourage users and providers to direct benefits arising from the utilization of genetic resources towards the conservation of biological diversity and the sustainable use of its components." In this context, bioprospecting activities and the subsequent commercialization of genetic resources (and derived biochemical compounds) could help filling the funding gap for biodiversity conservation.

At the local level, the PIC and MAT with ILC (Article 6.2) as well as the respect for requirements to lawfully access traditional knowledge (Articles 7 and 12) could also provide incentives to better conserve biodiversity, since part of the revenues from the use of genetic resources and associated TK could be captured by ILC. This could increase local biodiversity stewards' private returns on investment in conservation and could balance private benefits from biodiversity damaging activities (e.g. intensive cultivation, commercial logging, etc.).

Though theoretically sound, we believe that these assumptions are often not founded on realistic economic expectations and legally robust evidence.

A tiny piece of a small pie

Not only might the total economic value from bioprospecting activities be limited, as shown earlier,

but provider countries and ILC are also often relatively harmless when aiming to capture their fair share of advantages, especially until the Nagoya Protocol is implemented.

First, economically, a provider country might be endowed only with substitutable genetic resources. On the one hand, in transboundary situations some genetic resources can be shared between several countries which become *de facto* competitors. On the other, genetic resources might have been collected prior to the entry into effect of the CBD and its Nagoya Protocol.² Thus, such resources can be available from *ex situ* genebanks with the consequence that bioprospecting *in situ* is not necessary. Historically, in both cases, limited or no value from the utilization of genetic resources has accrued to provider countries, which are left with no additional incentives to conserve biodiversity *in situ*.

Second, although the Nagoya Protocol stipulates that user countries shall take measures to ensure that users under their jurisdiction respect ABS requirements of the provider country (Article 15), the relevant provisions are relatively vague and user countries may deliberately pass 'weak' compliance and monitoring measures. This may allow companies to elude the burden of complying with other countries' strict ABS requirements without facing remarkable consequences domestically. The Protocol neither mentions nor requires Parties to implement mandatory patent disclosure requirements. In the same vein, nowhere does it command that the violation of legal benefits sharing requirements *per se* be the basis for the revocation of allegedly wrongful patents. Overall, the Protocol does not seek to modify international IPR legal obligations and as a result, provider countries and communities can be left with limited opportunities to redress the alleged misappropriation of their genetic resources and associated TK.

Third, the multiplication of heterogeneous national access legislations will increase users' transaction costs. This will discourage potential bioprospecting companies which may redirect their efforts towards synthetic biology or to countries with the least cumbersome legal requirements. While the Nagoya Protocol provides for minimum international access standards that will ensure some degree of certainty, clarity and transparency of domestic legislation (Article 6), the choice of future bioprospecting missions will likely continue to be determined more on the basis of the flexibility of the legal framework of provider countries than on their genetic potential.

2. On temporal scope, see Natural Justice and Berne Declaration (2013).

Who benefits?

Should provider countries capture a more significant piece of the bioprospecting pie at the national level, these benefits may never trickle down to ILC or other stakeholders having decision-making power over the conservation of biodiversity. The provisions of the Nagoya Protocol that concern ILC's rights are weak and hortative in their nature, since the recognition of such rights is subject to domestic legislation. In practice, State Parties have an enormous discretion to decide on the ways, if ever there is political will, to involve communities in PIC and MAT procedures for benefit sharing. Thus, there is a clear risk that benefits from bioprospecting might be captured only at the government level, while providing local biodiversity stewards with no additional incentives to continue preserving their biocultural heritage.

THINKING OUT OF THE BOX

Although the potential of bioprospecting activities, regulated in accordance with the Nagoya Protocol, to conserve biodiversity is relatively limited, possible ways forward can be envisaged.

Trading and conserving biological resources beyond genetic resources

Biobrade generally refers to trade in biological resources and products derived from them, but it does not necessarily entail the "utilization of the genetic resources" in a sense that would trigger benefit sharing obligations under the Nagoya Protocol.³ For example, the Protocol does not apply to trade in commodities – such as the supply of Aloe Vera (cosmetics), Shea nut (cosmetics, food), Warburgia (antimalarial) and Neem (insecticide, dentifrice, etc.) – that are used as raw materials to prepare powders, essential oils, etc. without further involving the conduct of research and development. Yet, sustainable harvesting practices as well as fair pricing for these raw materials could significantly improve benefit sharing for communities and consequently biodiversity conservation.

Differently from the sampling of genetic resources for bioprospecting, the continued sourcing of biological resources over time is very often necessary for production of a wide range of biodiversity-related products (some of which may be directly based on the ILC's biocultural heritage). Hence, the conservation of such biological base is

3. Nagoya Protocol Article 2(c) states that: "Utilization of genetic resources" means to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology as defined in Article 2 of the Convention."

very much needed and is a profitable long-term strategy for provider countries, ILC and companies alike. As an important information tool and a voluntary price signal, market-based instruments involving voluntary certification mechanisms, such as the UEBT Ethical BioTrade Standard, can in this context usefully complement bioprospecting agreements with the view to promoting biodiversity conservation.

Benefit sharing, human rights and biodiversity conservation

The Protocol will have also synergic effects with the protection of human rights, biocultural heritage and the environment, if it is duly implemented. The recognition of the rights to participation and PIC of ILCs can be helpful to empower stakeholders that take care of biodiversity (Morgera, 2014, *forthcoming*). However, this is not sufficient to ensure the protection of biodiversity. In some cases, short-term interests of individuals and local communities may actually impinge upon biodiversity. In the absence of appropriate checks and balances and incentives, the allocation of new ownership rights may actually reinforce trends towards overexploitation of resources that are detrimental to collective interests in long-term conservation. Therefore, strengthening capacities, disseminating appropriate knowledge and technologies, and creating a level playing field for all stakeholders should contribute to long-term biodiversity research and conservation partnerships, both North-South and South-South. ■

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