Biological Diversity: A Multipolar Resource in a Multipolar World

By David R. Downes[*]

The Convention on Biological Diversity (CBD) was negotiated in the context of a "bipolar" dynamic between developing countries (the South, perceived as rich in genetic resources but poor in the technology needed to exploit them) and developed countries (the North, perceived as technology-rich but resource-poor). The CBD established an "access and benefit-sharing" framework for countries to gain greater benefits through control of access to their genetic resources. As implemented, however, this framework has increased the costs of international transactions to develop genetic resources, threatening to create an "anticommons" that inhibits rather than encourages beneficial development.

Genetic resources have always been distributed in a multipolar fashion that cuts across the North/South dichotomy. Technological capacity is increasingly multipolar as certain developing countries advance in sectors like pharmaceuticals and biotechnology. In another multipolar trend, advances in biotechnology are expanding the range of exploitable resources available in many countries and areas outside national jurisdiction. New technologies are also driving the dissemination of the capacity to exploit genetic resources across nonstate actors, which ultimately may call into question the relevance of the CBD's framework as it has evolved to date. A shift in emphasis from regulation to partnerships could be a better way to foster mutually beneficial international collaborations to study biological diversity (biodiversity) and develop genetic resources.

Genetic Resources in the Convention on Biological Diversity (CBD)

The CBD entered into force in 1993. Its 193 parties include nearly all members of the United Nations, but not the United States. One of the CBD's three objectives is the fair and equitable sharing of benefits from the use of genetic resources, including by appropriate access to those resources.

As defined in the CBD, "genetic resources" are the genetic material of "actual or potential value" found within Earth's biodiversity, which encompasses the variability found within all forms of life. Distinctive genes express chemical compounds or other characteristics that can be used in science or technological applications such as pharmaceuticals, biotechnology, or crop development.

In this sense, genetic resources are an information resource. Information resources tend to be expensive and difficult to provide, but cheap and easy to copy. As a result, incentives are inadequate for the supply of the resource. Scholars typically refer to such a resource as a kind of "public good." The CBD's provisions on access and benefit-sharing employ one of the classic remedies for undersupply of public goods—the creation of legal rights by which a holder of a resource can exclude others unless they pay for access, thus creating an incentive to create, document, or preserve it.

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From Bipolar to Multipolar

Beginning as early as the 1970s, the international discussion of development involved a North-South tension between developed and developing countries. As they achieved independence, the former colonies of the Western imperial powers asserted sovereignty over their natural resources and sought to renegotiate the terms for foreign access to them. In international discussions on environment, there was a tension between the North's desire to regulate the environment to achieve global benefits, and the South's desire to exploit its resources rapidly and unconstrained by environmental protections. The concept of sustainable development emerged as a way to resolve this dialectic by integrating environmental protection with economic and social development. UN members pursued a global effort to implement sustainable development through negotiations on a set of instruments signed at the Earth Summit in 1992 in Rio de Janeiro, one of which was the CBD.

In the CBD negotiations, developing countries were perceived as rich in genetic resources but poor in the technology needed to exploit them, while developed countries were perceived as technology-rich but resource-poor. Article 15 of the CBD recognizes sovereign rights to control access to genetic resources. Previously viewed as a common heritage available to all, these resources would now be subject to control by states, supposedly advantaging the South, where ecosystems like tropical rainforests, known to be especially rich in biodiversity, are concentrated.

But behind the North-South dichotomy, biodiversity has always been distributed in a multipolar fashion. The nongovernmental organization Conservation International has identified seventeen "mega-diverse" countries that together contain a disproportionate amount of the world's biodiversity according to conventional measures. Two of these (the United States and Australia) are from the developed world. The remaining set of fifteen developing "mega-diverse" countries excludes the vast majority of developing countries.

Biodiversity is also "multipolar" within countries. It is unevenly distributed across national territory. Different groups use, conserve, and value it differently. This leads to tension and conflict between different groups—national elites, commercial harvesters and developers, local and indigenous people, and scientists. Even in the countries "poorest" in biodiversity by conventional measures, the local stock of biodiversity is essential for the livelihoods, even survival, of local people.

From Multipolar to the Tragedy of the Anticommons

The CBD leaves it to each party to define the terms for access to genetic resources. The national legislation passed by parties over the years has established a wide variety of institutions and regulations. Users seeking access may need to apply to multiple authorities and go through lengthy bureaucratic procedures. The feeling that biodiversity is a treasury of "green gold" which must be guarded from outside "biopirates" has contributed to the elaboration of safeguards out of proportion to the economic value likely to be realized through access transactions. As one industry representative commented to researchers "It is easier to cut down a forest for timber than to get a few hundred grams of renewable plant samples for cancer research."[1] The burden is especially heavy for academic researchers with limited resources and little or no expectation of financial return.

[1] Sarah Laird & Rachel Wynberg, *Bioscience at a Crossroads: Implementing the Nagoya Protocol on Access and Benefit Sharing in a Time of Scientific, Technological and Industry Change*, at 10 (2012), *available at* https://www.cbd.int/abs/doc/protocol/factsheets/policy/policy-brief-01-en.pdf.

This situation has been described as a "tragedy of the anticommons."[2] Whereas the classic "tragedy of the commons" results from too little exclusion from the resource, an "anticommons," results from the assertion of too many rights to exclude others.[3] A proliferation of property rights claims over segments of a resource necessitates elaborate and complex negotiations, increasing transaction costs, delay, and uncertainty. The division of biodiversity into over 190 national domains, subject to complex and often diverging access requirements, is hindering scientific research and industrial development, including international partnerships that could build capacity in the countries holding the resources. Only limited progress toward transparency or standardization was achieved with the adoption by the CBD parties of the Nagoya Protocol on genetic resources in 2010.

Plant Genetic Resources

Meanwhile, the access and benefit-sharing regime evolved differently for the subset of genetic resources found in plants that are valuable for food and agriculture. Traditional crop varieties and wild relatives of crops provide genetic resources used to strengthen disease resistance and other desired qualities in major food crops. To a certain extent, they are found in centers of diversity that often fall within the territories of developing countries. Crop genetic resources are essential for maintaining a stable, adequate food supply for prosperity, even survival. But no country is self-sufficient in the genetic resources needed to maintain productivity of all the crops it depends on. All depend on access to resources held elsewhere.

In recognition of this mutual dependency, existing international seed banks were put "in trust" for the international community, and countries negotiated the International Treaty on Plant Genetic Resources for Food and Agriculture, which entered into force in 2004 and has 128 parties (not including the United States). The International Treaty's framework is intended to reduce transaction costs, share benefits, and encourage free exchange under standard material transfer agreements of genetic resources for certain crops for certain uses.

Technology Trends and "Micropolarity"

Multipolarity is increasingly evident on the "user" or "access-seeker" side. The relative capacity of countries is evolving, as some—but by no means all—developing countries advance in their technological capacity in sectors like biotechnology, agriculture, and pharmaceuticals. Rapid advances in biotechnology are making a wider range of genetic material available as resources, including microbiota distributed throughout every country, organisms outside national jurisdiction in the oceans or Antarctica, and biological specimens already collected and held outside their country of origin in gene banks or museums.

Technologies to locate, study, and exploit genetic resources are advancing and becoming distributed more widely, not only among countries but among firms, academic institutions, and individual researchers—what might be called a "micropolar" situation. It will soon be possible to quickly extract the information from a small biological sample, encode it electronically, and send the electronic information anywhere in the world through the Internet. These trends will reduce the incentive to invest in complicated transactions under the Nagoya

[2] Sabrina Safrin, *Hyperownership in a Time of Biotechnological Promise: The International Conflict to Control the Building Blocks of Life*, 98 AJIL 641, 652–58 (2004).

[3] Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 Harv. L. Rev. 621 (1998).

Protocol, test the boundaries of what it means to gain "access" to genetic resources, and challenge, as a practical matter, the capacity to enforce restrictions on transfer.

Proposals to expand the CBD's coverage to include genetic resources found outside national jurisdiction or collected prior to its entry into force would compound rather than remedy the anticommons problem. Further complication or expansion of regulation will not encourage the partnerships needed to share knowledge or develop benefits. A better remedy would be to foster flexible collaborations based on trust, an emerging ethic of fair dealing, and sharing of benefits, broadly defined, in the relevant disciplines.

MULTIPOLAR GOVERNANCE ACROSS ENVIRONMENTAL TREATY REGIMES: THE RAMSAR CONVENTION IN ITS MIDDLE AGE

By Kim Diana Connolly[*]

INTRODUCTION

Adopted in 1971, the Ramsar Convention has entered "middle age."[1] In 2013, the Ramsar Convention (formally known as the Convention on Wetlands of International Importance especially as Waterfowl Habitat)[2] continues to bring countries together to support wetlands.[3] The Ramsar Convention is the only international environmental treaty that focuses on a specific ecosystem: wetlands. The Convention defines wetlands very broadly, to include "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres."[4] My remarks will discuss the Ramsar Convention generally, and reflect on its role in the world of multipolar governance.

HISTORICAL CONTEXT AND CURRENT LAW

The Ramsar Convention emerged in 1971 after more than eight years of work by concerned nations and nongovernmental organizations.[5] First signed by representatives of 18 countries

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[1] There is no agreed-on definition of "middle age," and in fact the U.S. Census Bureau has moved away from using that term. *See* U.S. Census Bureau, *Age and Sex Composition: 2010, 2010 Census Brief*, http://www.census.gov/prod/cen2010/briefs/c2010br-03.pdf. But many would agree that those over the age of 40 are in the middle-age range. *See, e.g.*, middleage.org, *Definition—When or What Is Middle Age?*, http://www.middleage.org/definition.shtml.

[2] Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Feb. 2, 1971), T.I.A.S. No. 1084, 996 U.N.T.S. 245 (amended 1982 & 1987) [hereinafter Ramsar Convention]. A current copy of the Ramsar Convention text can be found at http://www.ramsar.org/cda/en/ramsar-documents-texts/main/ramsar/1-31-38_4000_0__.

[3] *See generally* www.ramsar.org.

[4] Ramsar Convention art. 1. This is much more broad than the definitions of wetlands used under U.S. regulations and guidance. *See generally* U.S. Environmental Protection Agency, http://water.epa.gov/lawsregs/guidance/wetlands/definitions.cfm.

[5] G.V.T. MATTHEWS, THE RAMSAR CONVENTION ON WETLANDS: ITS HISTORY AND DEVELOPMENT (1993) (recounting that "[i]t took just over eight years of conferences, technical meetings and behind the scenes discussions to develop a convention text"), *available at* http://www.ramsar.org/cda/en/ramsar-pubs-books-ramsar-convention-on-21313/main/ramsar/1-30-101%5E21313_4000_0__ .