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The Convention on Biological Diversity and International University-Industry Collaboration: A suggestion towards a Consensus

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1. Background

The Convention on Biological Diversity (hereinafter, the ‘CBD’) is an international legally-binding treaty. The Convention has three main goals, which are (1) conservation of biological diversity, (2) sustainable use of its components and (3) fair and equitable sharing of benefits arising from genetic resources. One can say that the central objective of the CBD is to develop national strategies for the conservation and sustainable use of biological diversity. Article 1 of the CBD states the following:

‘The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation 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’.

It might be difficult to identify links between the CBD and intellectual property rights due to the fact that the CBD regulates mainly on ‘genetic resources’ which do

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not fall into the category that lies under the umbrella of traditionally defined ‘intellectual property’. Such ‘genetic resources’ are not considered as intellectual creations by human beings. Therefore, some would say that the protection of genetic resources does not represent an intellectual property issue. However, Article 16 of the CBD states:

‘… In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognise and are consistent with the adequate and effective protection of intellectual property rights. … Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that Contracting Parties, in particular those that are developing countries, which provide genetic resources are provided access to transfer of technology which makes use of those resources, on mutually agreed terms, including technology protected by patents and other intellectual property rights, where necessary, …’.

Suppose that an internationally recognised pharmaceutical company sent its researchers to a developing country and obtained some genetic resources there. Subsequently, the company developed a new medicine from the resources and filed a patent. The company then earned a considerable profit from the sale of the medicine, but the developing country received no compensation. In fact, the inhabitants of the developing country were not even able to purchase the medicine because it was too expensive for them. Furthermore, the patent system prohibits the developing country from producing the medicine.

This is precisely the scenario which has occurred in the real world which the CBD is designed to address. The pharmaceutical company in question may well assert that it was the company which developed the new medicine, and in the process incurred considerable costs to the company. However, had the company not developed the genetic
resources, they would have been of no use to human beings. This claim is both reasonable and supportable. Although there is much to be said on both sides, the CBD no longer permits companies to behave as they like.

Then, suppose the aforementioned researchers questioned the local people about the efficacy of the genetic resources, prior to starting their collection and development. In such a case, the company would save a substantial amount of money and time thanks to the traditional knowledge of the local people. This might be recognised as a free rider effect which would not seem very fair to the local people unless the company were to offer a certain type of compensation to them. Article 8 of the CBD states:

‘Each Contracting Party shall, as far as possible and as appropriate: … (j) [s]ubject to its national legislation, … promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage equitable sharing of the benefits arising from the utilisation of such knowledge, innovation and practice: …’

Therefore, the company should now consider providing compensation to the local community in accordance with the CBD.

2. The Convention on Biological Diversity

The Convention was opened for signature at the Earth Summit in Rio de Janeiro on the 5th of June 1992, and entered into force on the 29th of December 1993. It was in 2010, the International Year of Biodiversity, that the Nagoya Protocol was adopted at the 10th Conference of Parties to the CBD in October in Nagoya, Japan. The UN declared the period from 2011 to 2020 as the UN Decade on Biodiversity on the 22nd of December 2010.
2.1. About the CBD

The CBD recognised for the first time in international law that the CBD was ‘a common concern of human beings’ and represented an integral part of the development process. The agreement covers all ecosystems, species and genetic resources. It connects traditional conservation efforts to the economic goal of utilising biological resources sustainably. Moreover, it sets principles for the fair and equitable sharing of the benefits that arise from the utilisation of genetic resources, notably those destined for commercial use. Furthermore, through its Cartagena Protocol on Biosafety\(^{(2)}\), it covers the rapidly expanding field of biotechnology, addressing technology development and transfer, benefit sharing and biosafety issues. The CBD is legally binding. The member states\(^{(3)}\) which are parties to it are obliged to implement its provisions.

The convention reminds decision makers that natural resources are not infinite and sets out a philosophy for their sustainable use. While past conservation efforts were aimed at protecting particular species and habitats, the CBD recognises that ecosystems, species and genes must be utilised for the benefit of all human beings. However, this should be achieved in a way and at a rate which does not lead to the long-term decline of biological diversity.

The CBD also offers decision makers guidance based on the precautionary principle.

\(^{(2)}\) The Cartagena Protocol on Biosafety of the Convention (hereinafter ‘Biosafety Protocol’) was adopted in January 2000. The Biosafety Protocol seeks to protect biological diversity from the potential risks posed by living modified organisms that result from modern biotechnology. The Biosafety Protocol makes clear that products developed from new technologies must be based on the precautionary principle and allow developing countries to balance public health against economic benefits. It will, for example, allow countries to ban imports of a genetically-modified organism if they believe that there is not enough scientific evidence which demonstrates that the product is safe, and it also requires exporters to label shipments containing genetically-altered commodities such as corn or cotton. The required number of 50 instruments of ratification/accession/approval/acceptance by countries was reached in May 2003. In accordance with the provisions of Article 37, the Biosafety Protocol entered into force on the 11th of September 2003.

\(^{(3)}\)
whereby in cases where there is a threat of significant reduction or loss of biological diversity, a lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimise such a threat. The CBD acknowledges that substantial investments are required to conserve biological diversity. It argues, however, that conservation should facilitate significant environmental, economic and social benefits in return.

A large majority of the member states have established National Biodiversity Strategies and Action Plans (NBSAP) in order to implement the convention. For example, the United Kingdom, New Zealand and Tanzania have instigated elaborate contingencies in order to conserve individual species and specific habitats. The US has produced

(3) Afghanistan, Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Brunei Darussalam, Bulgaria, Burkina Faso, Burma, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, Chad, Chile, People's Republic of China, Colombia, Comoros, Democratic Republic of the Congo, Republic of the Congo, Cook Islands, Costa Rica, Côte d'Ivoire, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, European Union, Fiji, Finland, France, Gabon, The Gambia, Georgia, Germany, Ghana, Greece, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Hungary, Iceland, India, Indonesia, Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kiribati, Kuwait, North Korea, South Korea, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Libya, Liechtenstein, Lithuania, Luxembourg, Republic of Macedonia, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Marshall Islands, Mauritania, Mauritius, Mexico, Federated States of Micronesia, Moldova, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, Nauru, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Niue, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, São Tomé and Príncipe, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, Somalia, South Africa, Spain, Sri Lanka, Sudan, Suriname, Swaziland, Sweden, Switzerland, Syria, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Tuvalu, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia, Zimbabwe. The US has signed, but not ratified the treaty.
one of the most thorough implementation programmes through the creation of Species
Recovery Programs and through other mechanisms which have been in place in the
country for many years of the purpose of species conservation. Singapore has also es-
established a detailed National Biodiversity Strategy and Action Plan. The National Bio-
diversity Centre of Singapore represents the country within the Convention for Biologi-
cal Diversity.

2.2. Issues

The CBD incorporates a wide variety of issues which cover several fields. In the en-
vironmental field, it addresses issues relating to (1) measures and incentives for the
conservation and sustainable use of biological diversity, and (2) impact assessment
etc. The CBD also addresses (1) education and public awareness, and (2) the provi-
sion of financial resources in order to protect the environment and biodiversity.

Regarding intellectual property related issues, the CBD restricts the behaviour of
those who are provided with traditional knowledge or biodiversity resources through
(1) regulating access to genetic resources and traditional knowledge, including prior
informed consent received from the party providing resources, and (2) sharing, in a
fair and equitable way, the results of research and development and the benefits arising
from the commercial and other utilisation of genetic resources with the member states
providing such resources.

Moreover, the CBD requires the member states to guarantee (1) access to and
transfer of technology, including biotechnology, to the governments and/or local com-
munities that provided the traditional knowledge and/or biodiversity resources, and
(2) technical and scientific cooperation.

It is interpreted that the CBD awards considerable power to the countries providing
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the genetic resources (hereinafter ‘providing countries’). However, in this context is it possible for these providing countries to decide everything just as they wish? Unfortunately, the CBD does not function in that way.

Firstly, if the providing countries prohibit the use of their genetic resources or demand unreasonable compensation for their use, private companies are at liberty to pursue their business without the genetic resources or to search for alternative resources. Should the providing countries make excessive demands, private companies are under no obligation to conclude unreasonable contracts. In such cases it is likely that the providing countries will not succeed in receiving anything and this will not beneficial for the world as a whole either. In fact, it would actually represent a no-win situation.

In the case of South Africa during the apartheid era for example, due to the external imposition of economic sanctions, imports of petroleum were severely restricted. As a consequence, South Africa developed alternative energies which did not require petroleum, and it is now one of the most advanced countries in the world in this field. This reveals how providing countries may lose bargaining power permanently, once private companies succeed in developing alternative resources.

Secondly, it is important for providing countries to consider whether or not such genetic resources are to be found exclusively within their own territory. For instance, Borneo Island (Kalimantan) is famous for its great biodiversity and is divided into Malaysian and Indonesian Territory. Supposing Malaysia imposed very strict conditions on private companies who wished to utilise genetic resources found in Borneo, while Indonesia adopted a more flexible stance, in such circumstances it is very likely that the majority of private companies would seek to negotiate with Indonesia, and that Malaysia would receive very little commercial interest.
With regard to the actual situation in the region at the present time, the Malaysian government devolves certain legislative powers to the States of Sabah and Sarawak, and CBD-related legislation falls under this remit. The State of Sarawak enacted its Sarawak Biodiversity Centre Ordinance in 1997 (4) and the State of Sabah followed suit in 2000 (5); however Indonesia has yet to enact any special comprehensive legislation. (6) Nevertheless, the Indonesian government has up until now dealt with issues on a case by case basis, which has appeared quite successful. (7)

The point is that should the two regions have different regulations, private companies would likely prefer to negotiate with the country that is more in favour of their activities. Therefore, in the case of South Africa for example, the State of the Western Cape which does not have national borders and the State of Limpopo which borders Botswana, Zimbabwe and Mozambique have different bargaining powers, despite the fact that both states lie within the overall jurisdiction of South Africa.

3. The CBD and International University-Industry Collaboration

Apart from the difficulties identified above, many researchers in both universities and industries have stated that the CBD might actually end up discouraging smooth collaboration on international research projects. The conditions stipulated by legislation related to the CBD frequently require extremely complicated administrative work, prevent the free movement and interaction of researchers and impose considerable costs upon all stakeholders.

Reviewing such legislation, most of it stipulates exemption from collaboration research with universities and public research institutes, whilst requirements in cases of the use of genetic resources are far fewer. The author therefore proposes to make the

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best use of these exemptions in order to create win-win situation. He holds that what is now required are, not prohibition clauses stipulating how not to use precious genetic resources, but a system which promotes negotiation between providing countries and private companies facilitated through universities.

(6) In order to implement the obligations stipulated in Article 8 of the CBD, a contracting party should set up a national strategy on invasive alien species (hereinafter ‘IAS’), develop legislation to prevent the introduction of new IAS and the spread of already present IAS, carry out risk analysis, make use of information and communication technology to carry out risk communication, and provide appropriate infrastructure. At the present time, some measures have already been implemented, namely: commitment of certain government institutions to the importance of addressing issues relating to IAS (although many do not know precisely who is doing what); ratification of the CBD without backing it up it with sufficient implementing regulations and administrative procedures; risk analysis of certain plant and animal IAS included in the pest list under the guidance of IPPC whilst leaving others unregulated; development of a database of IAS already present in certain areas of the country; some information exchange activities without implementing standardised methods; and the provision of limited infrastructure.

Having compared the measures still to be implemented with those that have been carried out so far, some gaps remain to be filled. These relate to the following:

a. interagency coordinating committee, national strategy, defined agency roles and responsibilities linked to regional organisations/institutions;

b. national strategy action plans, identification of initial management priorities, main threats (species and pathways), initiation of regulatory gap analysis;

c. preliminary national surveys, official reference lists, continuing development of national and exotic invasive species databases;

d. training needs assessment and implementation of training for government officials, extension agents in agriculture, forestry, fisheries, and environment;

e. engagement of regional governmental institutions, stakeholders and trading partners in formulating coordinated strategies and frameworks, planning efforts, public awareness as to the mitigation of threats of IAS to livelihoods, economies, and biodiversity;

f. comprehensive regulatory framework, integration of international standards and pathways and risk assessment guidance and methodologies, research/diagnostic capacity, larger scale eradication and management activities and providing protocols for clean exports;

g. providing quarantine measure monitoring and information systems, and training infrastructure; import screening and listing approaches, country/regional specific prevention measures, involvement and promotion of regional and international standards;

h. early detection and rapid response: the capacity to mobilise small-scale eradications, monitoring and warning systems to inform key agencies and stakeholders.
Such a platform has already been established at many universities around the world. Not only in economically developed countries, but also in emerging countries such as Malaysia and South Africa, university-industry collaboration is already functioning very successfully. Such technology transfer offices or innovation offices are expected to provide impetus towards the facilitation of benefit sharing between providing countries and private companies. Furthermore, it is not only in the providing countries but also in the provided countries, that a university or public research institute can create such a benefit-sharing system.

Not all providing countries provide clear guidelines for the usage of their genetic resources. Most Japanese companies, for example, are very reluctant to become involved in the use of genetic resources in case they violate the CBD-related rules in the provid-
ing country. In this context, the Biological Research Centre at the Japanese National Institute of Technology and Evaluation (hereinafter ‘NITE’) initiated at Memorandum of Understanding (MOU) and a Project Agreement (PA) in accordance with the CBD.\(^9\)

The NITE concluded MOUs on Joint Research Programmes for the Conservation and Sustainable Use of Microbial Resources, signed by the representatives of the NITE and the following partner organizations: Ministry of Science and Technology (MOST) of Viet Nam involving Viet Nam National University, Hanoi; the Ministry of Education (MOE) of the Union of Myanmar along with a PA with Pathein University; the Institute of Biology of the Mongolian Academy of Sciences of Mongolia; the National Center for Genetic Engineering and Biotechnology (BIOTEC) of Thailand; the Institute of Microbiology, Chinese Academy of Sciences, amongst others. By means of this approach, Japanese companies have secured access to genetic resources through the NITE without any fear of violating the CBD.

4. Conclusion

As the example of the NITE demonstrates, the author holds that it is essential to create a benefit-sharing system in order to achieve the central objective of the CBD; it is insufficient merely to enact national CBD-related laws. Rather, the system might work more effectively without such laws if a solid benefit-sharing system were to be put in place. Moreover, within the standard political process it usually requires considerable time for a new bill to become law, and this also requires a massive amount of paperwork and other complicated administrative procedures.\(^{10}\) In the view of the author this

\(^{9}\) The objective of this collaboration is to conduct research and development for the conservation and sustainable use of biological resources for academic, industrial and other purposes, leading to their utilisation and commercialisation. The NITE collaborates with domestic researchers to collect, isolate and characterise microorganisms in providing countries. The NITE provides technical transfer, sharing of research and development results, and capacity building in order to develop microbiology and to encourage the utilisation of microorganisms.
seems highly inefficient. Therefore, through bypassing such inefficiency, it is expected that a technology transfer office or innovation office located within a university or public institute could create a benefit-sharing system under a scheme of university-industry collaboration. This could be economically beneficial to the university or research institute, which would likely encourage the further development of research activities taking place there.

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(10) At least that is the case in Japan.

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