

---

---

# REVISTA DE DIREITO INTERNACIONAL

BRAZILIAN JOURNAL OF INTERNATIONAL LAW

---

## Editores responsáveis por essa edição:

Editores:

Nitish Monebhurrn

Ardyllis Alves Soares

Marcelo Dias Varella

Editores convidados:

Sandrine Maljean-Dubois

Sophie Lavallée

ISSN 2237-1036

Revista de Direito Internacional Brazilian Journal of International Law	Brasília	v. 19	n. 1	p. 1-441	abr	2022
--	----------	-------	------	----------	-----	------

## Bioeconomia e o Protocolo de Nagoya

Danielle Mendes Thame Denny\*\*

### Abstract

Brazil has ratified the Nagoya Protocol putting an end to a decade of internal disputes among agrobusiness, environmentalists and scientists. But the challenges remain. The utilization of genetic resources can lead to innovation in many types of industry, but depending on the way they are exploited they can be a form of unfair competition or even biopiracy. This paper brings some tools designed to curtail this and that are brought forward by international legal documents as well as by voluntary compliance mechanisms, such as the voluntary sustainability standards. The aim is shed a light on the pros and cons of these asymmetrical regulatory systems and the importance that these instruments are used to favour global justice and not the interests of a minority. In this way, the research aims to contribute to the UN SDGs 2 (sustainable agriculture), 12 (responsible production), 15 (preservation of life on land), 16 (justice and effective institutions) and 17 (partnerships and means of implementation).

**Keywords:** Brazil; Nagoya Protocol; Bioeconomy; Bio innovation; Biopiracy; Biotrade; Genetic resources; Voluntary Sustainability Standards.

### Resumo

O Brasil ratificou o Protocolo de Nagoya pondo fim a uma década de disputas internas entre agronegócios, ambientalistas e cientistas. Mas os desafios permanecem. A utilização de recursos genéticos pode levar à inovação em diversos tipos de indústria, mas dependendo da forma como são explorados podem ser uma forma de concorrência desleal ou mesmo biopirataria. Este artigo traz algumas ferramentas destinadas a coibir isso e que são trazidas por documentos jurídicos internacionais, bem como por mecanismos de conformidade voluntária. O objetivo é lançar uma luz sobre os prós e contras desses sistemas regulatórios assimétricos e a importância que esses instrumentos são usados para favorecer a justiça global e não os interesses de uma minoria. Dessa forma, a pesquisa visa contribuir com os ODS 2 (agricultura sustentável), 12 (produção responsável), 15 (preservação da vida na terra), 16 (justiça e instituições efetivas) e 17 (parcerias e meios de implementação) da ONU.

**Palavras-chave:** biodiversidade brasileira; biodiversidade; Bio inovação; Biopirataria; Recursos genéticos; Protocolo de Nagoia; Padrões Voluntários de Sustentabilidade.

\* Recebido em 21/05/2021  
Aprovado em 10/12/2021

\*\* Postdoctoral researcher at Escola Superior de Agricultura Luiz de Queiroz, Piracicaba, Brazil; and visiting researcher at Asia-Pacific Centre for Environmental Law, at National University of Singapore, Singapore. PhD on International Environmental Law at Universidade Católica de Santos, Brazil. Lawyer licensed to practice in Brazil since 2001(OAB/SP). Former CAPES/CNPQ fellow, and former visiting researcher at Yale University (USA), University College London (UK).  
Email autor: danielle.denny@gmail.com

# 1 Introduction

One of the most contemporary pressing problems we face is the necessary cognitive change regarding sustainability. On the one hand; the impending climate catastrophe and on the other, the need to boost the economy. However, this dichotomy can only be overcome with the identification of points of convergence that lead to economic development at the same time that social and environmental benefits are generated.

For countries rich in natural resources and megadiverses<sup>1</sup> such as Brazil<sup>2</sup>, sustainability must be perceived as a business opportunity and not as an obstacle. However, there is a constant conflict in the narratives related to the theme, both within the country and internationally. The interdependence in this matter is remarkable, with a lot of foreign regulation, such as the European one<sup>3</sup>, which starts to have indirect application, demanding that the Brazilian production proves commitment with certain values that should be, in principle, in its own interest, but which are disputed through the fulfillment of several standards that measure the degree of adherence of national production to what is required by European public policy.

In this example, the European Commission has set as a long-term goal the development of a competitive, efficient and low-carbon economy by 2050. The bioeconomy can play an important role in achieving this goal. In Europe alone, the market is estimated at around € 2.4 billion<sup>4</sup>, including agriculture, food, beverages, agro-industrial products, aquaculture, forestry, wood-based industry, biochemists, enzymes, biopharmaceuticals, biofuels and bioenergy.

The bioeconomy is inserted in the broader context of green economy<sup>5</sup>, and is focused on the use of re-

newable raw materials and the application of research, development and innovation and industrial biotechnology in sectors such as food, medicines, chemicals, and biofuel production<sup>6</sup>. The focus of the bioeconomy is to create new opportunities for economic growth in sectors that have a biological basis, considering the fulfillment of sustainable development objectives, the challenges of food insecurity in the supply of raw materials, and the increasing environmental restrictions in varying levels of jurisdiction.

The bioeconomy concept embraces the production, utilization, conservation, and regeneration of biological resources, traditional knowledge, biotechnology, better practices, and innovation, to provide more sustainable and circular solutions increasing the uses of the biomass and reusing most or all the residues. The bioeconomy encompasses the 1) primary production sectors (crop and livestock production, forestry, fisheries, aquaculture, extractivism); 2) the ecosystems that supply the primary materials and services to these sectors; 3) the secondary production sectors, such as cosmetics, plastics, pharmaceuticals, food manufacturing and processing industries; 4) the tertiary (service) sectors, such as research and innovation, transport, the retail sector, and waste management<sup>7</sup>.

In a nutshell, a bioeconomy involves the use of biotechnology on a large scale, with the application of science and technology to living organisms, as well as parts, products and models of them, to alter living or non-living materials for the production of knowledge, goods and services. At this point, the transition to a bioeconomy will depend on the advancement of technology, coordinated public policies, competitive costs and, above all, the availability of sustainable, standardized and certified biomass.

<sup>1</sup> United Nations Environment Programme World Conservation Monitoring Centre UNEP-WCMC, 'Megadiverse Countries Definition| Biodiversity A-Z' (1988) <https://www.biodiversitya-z.org/content/megadiverse-countries>. Accessed: 1 Feb. 2021.

<sup>2</sup> There are 17 megadiverse countries that have about 70% of the planet's biodiversity in their territories: Brazil, Colombia, Mexico, Venezuela, Ecuador, Peru, United States, South Africa, Madagascar, Democratic Republic of Congo, Indonesia, China, Papua New Guinea, India, Malaysia, Philippines and Australia.

<sup>3</sup> European Commission, A European Green Deal 2019.

<sup>4</sup> Nicolae Scarlat and others, 'The Role of Biomass and Bioenergy in a Future Bioeconomy: Policies and Facts' (2015) 15 Environmental Development 3.

<sup>5</sup> UNEP (Ed), *Towards A Green Economy: Pathways To Sustainable Development And Poverty Eradication* Unep, 2011.

<sup>6</sup> D D'Amato and others, 'Green, Circular, Bio Economy: A Comparative Analysis of Sustainability Avenues' (2017) 168 Journal of Cleaner Production 716; Chetan Keswani, *Bioeconomy for Sustainable Development* (Springer 2020); D Kleinschmit and others, 'Environmental Concerns in Political Bioeconomy Discourses' 15; Joachim Pietzsch, *Bioeconomy for Beginners* (Springer 2020) <<https://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=6132421>> accessed 6 January 2021.

<sup>7</sup> FAO. *Guide On Incentives For Responsible Investment In Agriculture And Food Systems*. 2021. Disponível em: <Http://Www.Fao.Org/3/Cb3933en/Cb3933en.Pdf>. Accessed: 1 Jul. 2021; BOGDANSKI, A. et al. *Guidance Note On Monitoring The Sustainability Of The Bioeconomy At A Country Or Macro-Regional Level*. 2021. disponível em: <Https://Www.Fao.Org/Documents/Card/En/C/Cb7437en>. Accessed: 10 Dec. 2021.

This basically because the move to an economic model that is driven by biological rather than fossil resources, implies many trade-offs, and bring risks that have to be well managed privately and public to bring the economy closer to the sustainable development goals<sup>8</sup>. So, it is important to advance the effective bioeconomy monitoring systems to constantly assess the performance and progress of the bioeconomy across a range of indicators covering many dimensions of sustainability in a multifactorial way.

A step forward a better governance of its bioeconomy was made by Brazil that recently joined the Nagoya Protocol<sup>9</sup>, approved in 2010 and entered into force at the international level in 2014, conveying 124 countries that ratified it, out of a total of 196 that are parties of the umbrella treaty the Convention on Biological Diversity<sup>10</sup>. The topic has been very disputed and highlights many controversial views about production and development.

For example, on the one hand, the use of biological resources can lead to innovation in many types of industry, creating jobs and income, but on the other, it can stimulate biopiracy and unfair competition, depending on how they are exploited, which aims to establish a multilateral structure to regulate biodiversity resources and ensure the conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits resulting from the use of genetic resources.

The central idea of the protocol is that the access and use of a genetic resource originating in a given country, creates an obligation to share benefits in order to contribute to the conservation of biodiversity in the country of origin. Its main objective is to promote access to genetic resources and associated traditional knowledge,

and to share the benefits of developed products, based on biodiversity resources. But much of the efficiency of the protocol will depend on its implementation and the ability of document and certify, a role that has been delegated to voluntary sustainability standards.

## 2 Brazil's megadiversity regulation

Brazil is the 130th Party to ratify the Nagoya Protocol<sup>11</sup> that aims to create predictable conditions for access to genetic resources and help to ensure the fair and equitable sharing of benefits from the use of these resources. It took ten years, but its internal regulation about biodiversity has been built for 20 years. Brazil, because of its megabiodiversity is a global leader on the topic of access to genetic resources and benefit-sharing and has one of the more complete national legislation about the theme.

The current legal framework for access and benefit-sharing (ABS) is in place since 2015<sup>12</sup>. The most important definitions are (art. 2, I, II and III): (i) Genetic Heritage - information of genetic origin of plant, animal, microbial or other species, including substances from the metabolism of these living beings; (ii) Traditional knowledge of identifiable origin - information or practice of the indigenous population, traditional community or traditional farmer about the direct or indirect properties or uses associated with the genetic heritage; and (iii) Associated traditional knowledge of non-identifiable origin - associated traditional knowledge in which there is no possibility of linking its origin to at least one indigenous population, traditional community or traditional farmer<sup>13</sup>.

<sup>8</sup> UN UM. 'Agenda 2030.' Disponível em: Disponível em: [Http://Www.Un.Org/Ga/Search/View\\_Doc.Asp?Symbol=A/Res/70/1&Lang=E](http://www.un.org/ga/search/view_doc.asp?symbol=A/Res/70/1&Lang=E). Accessed: 12 Jun. 2017

<sup>9</sup> United Nations UN, 'Nagoya Protocol oUN UM. 'Nagoya Protocol On Access To Genetic Resources And The Fair And Equitable Sharing Of Benefits Arising From Their Utilization To The Convention On Biological Diversity.' Disponível em: [Https://Www.Cbd.Int/Abs/Doc/Protocol/Nagoya-Protocol-En.Pdf](https://www.cbd.int/Abs/Doc/Protocol/Nagoya-Protocol-En.Pdf)n Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity' <<https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>>.

<sup>10</sup> United Nations UN, 'CBD - Convention on Biological Diversity' <ht UN UM. 'Cbd - Convention On Biological Diversity'. Disponível em: [Https://Www.Cbd.Int/Doc/Legal/Cbd-En.Pdf](https://www.cbd.int/Doc/Legal/Cbd-En.Pdf) tps://www.cbd.int/doc/legal/cbd-en.pdf>.

<sup>11</sup> UN, 'Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity' (n 9).

<sup>12</sup> Congresso Nacional Brasil, Lei Nº 13123/2015 Regulamenta Convenção sobre Diversidade Biológica - CBD, dispõe sobre o acesso ao patrimônio genético, sobre a proteção e o acesso ao conhecimento tradicional associado e sobre a repartição de benefícios para conservação e uso sustentável da biodiversidade 2015 [L13123/2015].

<sup>13</sup> Congresso Nacional Brasil Lei Nº 13123/2015 Regulamenta Convenção sobre Diversidade Biológica - CBD, dispõe sobre o acesso ao patrimônio genético, sobre a proteção e o acesso ao conhecimento tradicional associado e sobre a repartição de benefícios para conservação e uso sustentável da biodiversidade (n 12).

Foreign individuals are prohibited from accessing the genetic heritage of Brazilian biodiversity or associated traditional knowledge. It must always act through a legal entity (art. 11, §1)<sup>14</sup>. The legal entity headquartered abroad can access, but must be associated with a national institution, public or private, for scientific and technological research (art.12, II)<sup>15</sup>.

Brazil's position is dichotomic. It is both a provider and user of biodiversity genetic resources, therefore Brazil's ABS system has to protect the resources and the traditional people interests at the same time that it facilitates provides a modern approach to foster innovation and develop biotechnology essential to the development of the national agribusiness that reached a final balance of US \$ 87.7 billion, contributing to the Brazilian trade balance closing 2020 with a positive balance of US \$ 50.9 billion, that is, a growth of 6% compared to 2019<sup>16</sup>.

Before the Brazil joining the Nagoya Protocol, only the Brazilian internal legislation was in place. Therefore, if the research or development would not involve Brazilian genetic heritage, the biodiversity national legislation would not be applied. As a consequence, the ABS national system could not be claimed in researches on soybeans, corn, sugar cane, shea etc, that are not native species from Brazil, but are central to the interests of the Brazilian agribusiness. This was perhaps the main reason that took so long to Brazil ratify the Nagoya Protocol.

Protecting biodiversity and traditional knowledge has a number of implications, mainly because it directly affects the interests of pharmaceutical, food, seeds, cosmetic and pesticide industries. In some cases, these sectors access the active ingredients of the species through traditional knowledge, make small modifications, patent and manufacture new products, based on the data col-

lected, without sharing the benefits. This generates a systemic kind of injustice difficult to regulate.

One of the greatest innovations of the Brazilian biodiversity law to curtail the unintentional types of violation was to allow the control of the activities developed within its scope to be done by an electronic system. The National System of Access to Genetic Heritage and Associated Traditional Knowledge (SISGen), in which the user provides the data required by law and does not need to wait for a return from the authorities so that the research can continue and explore the necessary products (art. 12)<sup>17</sup>.

The Biodiversity Law created two benefit-sharing regimes: a general and a specific one for agricultural activities, which includes food, beverages, planted forests, energy and fibres (arts. 17 and 18)<sup>18</sup>. In the general case, the benefit sharing is calculated on the net revenue of the finished product (e.g., medicine) and the person responsible for payment is the manufacturer of the finished product. In the case of agricultural activities, the benefit sharing is calculated on the net revenue of the reproductive material (e.g., seed) and the responsible for the payment is the producer of reproductive material in the chain (e.g., seed manufacturer).

Even with the law in place the burdens of proof can result in different rulings in similar situations even at the national level. Some emblematic cases involving the same business like Natura, a cosmetics company, that have rulings in favour of the company for the use of 'murumuru' and in favour of the communities for the use of 'breu branco' and 'priprioca', for example<sup>19</sup>.

### 3 The Nagoya international regime

<sup>14</sup> Congresso Nacional Brasil Lei Nº 13123/2015 Regulamenta Convenção sobre Diversidade Biológica - CBD, dispõe sobre o acesso ao patrimônio genético, sobre a proteção e o acesso ao conhecimento tradicional associado e sobre a repartição de benefícios para conservação e uso sustentável da biodiversidade (n 12).

<sup>15</sup> Congresso Nacional Brasil Lei Nº 13123/2015 Regulamenta Convenção sobre Diversidade Biológica - CBD, dispõe sobre o acesso ao patrimônio genético, sobre a proteção e o acesso ao conhecimento tradicional associado e sobre a repartição de benefícios para conservação e uso sustentável da biodiversidade (n 12).

<sup>16</sup> IPEA. 'Comércio Exterior De Produtos Do Agronegócio: Balanço De 2020 E Perspectivas Para 2021'. 2021. Disponível em: [https://www.ipea.gov.br/portal/images/stories/Pdfs/Conjuntura/210331\\_Cc\\_50\\_Nota\\_29\\_Setor\\_Externo\\_Agro.Pdf](https://www.ipea.gov.br/portal/images/stories/Pdfs/Conjuntura/210331_Cc_50_Nota_29_Setor_Externo_Agro.Pdf).

<sup>17</sup> Congresso Nacional Brasil Lei Nº 13123/2015 Regulamenta Convenção sobre Diversidade Biológica - CBD, dispõe sobre o acesso ao patrimônio genético, sobre a proteção e o acesso ao conhecimento tradicional associado e sobre a repartição de benefícios para conservação e uso sustentável da biodiversidade (n 12).

<sup>18</sup> Congresso Nacional Brasil Lei Nº 13123/2015 Regulamenta Convenção sobre Diversidade Biológica - CBD, dispõe sobre o acesso ao patrimônio genético, sobre a proteção e o acesso ao conhecimento tradicional associado e sobre a repartição de benefícios para conservação e uso sustentável da biodiversidade (n 12).

<sup>19</sup> Márcia Cristina Pereira de Melo Fittipaldi, 'Biodiversidade e Conhecimentos Tradicionais no Contexto da Biopirataria e dos Marcos Legais' (2020) 7 South American Journal of Basic Education, Technical and Technological 648.

The Nagoya Protocol was adopted in 2010 and entered into force on 12 October 2014. It is a supplementary agreement to the Convention on Biological Diversity – CBD<sup>20</sup> that was opened for signature in Brazil, at the Earth Summit in Rio de Janeiro in 1992, and entered into force in December 1993, and has 196 Parties, so near universal participation among countries. The Protocol builds on the access and benefit-sharing (ABS) provisions of the CBD by establishing predictable conditions for access to genetic resources and by helping to ensure the fair and equitable sharing of benefits arising from the utilization of these resources.

The concept of fair and equitable benefit sharing derives from international biodiversity law, international human rights law, and the law of the sea. It takes into consideration “the nature of the benefits to be shared; the activities from which benefit sharing arise; the beneficiaries; and fairness and equity as the rationale for benefit sharing in international law”<sup>21</sup>. It is a diffuse legal phenomenon in international law, derived from the understanding that genetic resources are not *res nullius*, but goods in public domain therefore the member states are sovereign to regulate the public uses that can be directly or indirectly, promoting responsible use and conservation committed to present and future generations<sup>22</sup>.

The extraction of genetic resources illegally or without the fair sharing of the benefits with the communities and country from where these substances are extracted are strongly connected with environmental degradation, diminishes tax revenues that depress public spending and causes social distress. Some examples of immediate effects are deforestation, depletion of biodiversity, impoverishment of individuals and communities who rely on those resources to sustain their existence, and the loss of traditional knowledge that was constructed through generations and could in the future lead to the development of new drugs or substances.

The Nagoya Protocol<sup>23</sup> seeks to put in place a multilateral framework that addresses biodiversity resources,

a central pillar that integrates the objectives of the Convention on Biological Diversity<sup>24</sup>: conservation of biological diversity, sustainable use of its components and fair and equitable sharing of benefits arising out of the utilization of genetic resources, as approved at Rio-92. The rationale is that access to a genetic resource originating in a country (known as *in situ*), which leads to a product, creates an obligation to share benefits in order to contribute to the conservation of biodiversity. Its central objective is to promote access to genetic resources and associated traditional knowledge, and the sharing of benefits from products developed from biodiversity resources.

Its parties are encouraged to create national rules that address access, prior informed consent from local communities, benefit sharing, mutually agreed terms, rules on compliance, among other instruments. The multilateral legal regime put forward by the protocol has been the major step towards the recognition of benefits to countries and populations often deprived of their rights regarding their biodiversity.

Although it focuses on the general ideas of areas of access, benefit-sharing and compliance, there has been since the beginning many fragmentations such as the industrialized countries put emphasis on facilitated access, whereas developing countries stressed the need for a better mechanism to realize benefit-sharing and compliance<sup>25</sup>. And some topics are still being negotiated, like the possible definition of a global benefit sharing mechanism for cases where it is not possible to have prior informed consent from local communities; genetic resources that exist in many neighbouring countries, and questions on assessing compliance with the Protocol, for example.

The Nagoya Protocol can assume an intrinsic role to the potential of the bio economy and to a universe of unknown possibilities to be explored as a way to foster knowledge, innovation, investments and socioeconomic and environmental benefits. The forum it provides as negotiating table on principles, concepts and experience arising from the implementation of national laws and regulations can be strategic to build informed and sensible political decisions. Without this multilateral

<sup>20</sup> UN, ‘CBD - Convention on Biological Diversity’ (n 10).

<sup>21</sup> MORGERA, Elisa. ‘The Need for an International Legal Concept of Fair and Equitable Benefit Sharing’ (2016) 27 European Journal of International Law 353, 23.

<sup>22</sup> CELI, Alina. ‘Análisis jurídico del ordenamiento jurídico internacional sobre protección de los recursos genéticos: desafíos y perspectivas en Uruguay a partir de la implementación del protocolo de Nagoya’ (2016) 13 Revista de Direito Internacional 117.

<sup>23</sup> UN, ‘Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utiliza-

tion to the Convention on Biological Diversity’ (n 9).

<sup>24</sup> UN, ‘CBD - Convention on Biological Diversity’ (n 10).

<sup>25</sup> RICHERZHAGEN, Carmen. ‘The Nagoya Protocol: Fragmentation or Consolidation?’ (2014) 3 Resources 135.

possibility, countries with important genetic resources or with a strong biotech industry can negotiate the creation of rules that can be harmful to the other countries.

There is a relevant clash since the negotiation of the Protocol, considering the proposals to create a global benefit sharing mechanism that would cover, in addition to *in situ* resources, originating from biodiversity of countries, resources found outside their origin (known as *ex situ*). This would mean that users of genetic resources from other countries hundreds of years ago had to share benefits, this could generate enormous insecurity, especially with regard to agricultural genetic resources explored by the agribusiness nowadays. The solution was to create an article on special considerations, asking countries to define how to deal with genetic resources for agriculture and the role of genetic resources for food security.

Another central theme is the potential for doing genetic sequencing and creating virtual databases with genome information has become exponential, this means that once access is made to do the sequencing, future access to the information can be made virtually to the pairs of genetic bases that make up the genome of the species in question. In such cases, it will not always be possible to know the country of origin of the resource, nor of which resource the genetic sequence comes from.

There are different property rights along the value chain of the utilization of genetic resources: private or common property rights over land and biological resources at the local level, state sovereignty over natural resources at the national level and the intellectual property rights of users of genetic resources over products derived from genetic resources. Intellectual property rights are the most critical factor in the access and benefit-sharing concept, because they are intangible and therefore asymmetrical with the strengths of the rights originated by the use of the “global scientific research commons”<sup>26</sup> or other commons such as a clean environment, especially if it is in relatively weaker states.

<sup>26</sup> DEDEURWAERDERE, T. et al. ‘Chapter 13. Governing Global Scientific Research Commons Under The Nagoya Protocol’. In: MORGERA, Elisa; BUCK, Matthias; TSIOUMANI, Elsa. (ed.). *The 2010 Nagoya Protocol On Access And Benefit-Sharing In Perspective*. Brill | Nijhoff 2013. Disponível em: [https://Brill.Com/View/Book/Edcoll/9789004217201/B9789004217201\\_015.Xml](https://Brill.Com/View/Book/Edcoll/9789004217201/B9789004217201_015.Xml). Accessed: 31 Aug. 2020.

Adding to the fact that genetic resources do not create robust property rights such as a patent or a trademark does, on one hand, governments have relatively strong rights over their biological resources and on the other hand intellectual property provide business with strong rights after a product has been developed, on the opposite end of the value chain. The protection of products for about 20 years assuring intellectual property holder long-term profits versus the interests of developing countries tend to lose if counterbalance on the local level is not established.

National governments have to ensure that the local level participates in the property rights over biodiversity and shares the benefits that arise from their use, and patent law must be amended to require the disclosure of the origin of genetic resources before the intellectual property is granted. With “biodiversity appearing more and more clearly as a cross-cutting issue”<sup>27</sup>, in need to be incorporated various policies, Nagoya is a step forward because it has strengthened the local level by calling for legislative reforms into the countries that are parties and for administrative or policy measures to ensure that benefits arising from the utilization of genetic resources that are held by indigenous and local communities are shared in a fair and equitable way with the communities concerned, on Article 5.2<sup>28</sup>.

Better compliance mechanisms to address developing countries lack of capacity to control the use of the material extract from their biodiversity, Articles 15–18<sup>29</sup>, is rather weak, it does not specify any measures that user countries should establish to address compliance, they are only required to implement “appropriate, effective and proportionate measures to address situations of non-compliance” in user countries, Articles 15.2 and 16.2<sup>30</sup>.

Asymmetric information is another problem. Neither providers can estimate the benefits to be derived from genetic resources nor can they precise the factual utilization of the materials once users have obtained

<sup>27</sup> Celi (n 22).

<sup>28</sup> UN. ‘Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity’ (n 9).

<sup>29</sup> UN. ‘Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity’ (n 9).

<sup>30</sup> UN. ‘Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity’ (n 9).

them, therefore, their claim revolve over unrealistic benefits and rarely users and providers can agree on a contract. And worried about unapproved use, provider countries opt for over-regulating use or simply deny access. Users, on the other hand, struggle to precise the exclusivity and the quality of the provided material and challenge the use of the received benefits, many states retain in the national level the amount received at the expenses of the interests of the local communities. Information is essential to overcome insecurity and enable flexible contracts voluntary sustainability standards can be used to cope with this problem at least up to a certain point.

The development of the Nagoya regime can be described as path dependent. Individuals, states or institutions may disagree about definitions, concepts, values, but perfectly agree about the need of “policies built on the causal logics of path-dependent processes that can help constrain future behaviour to achieve desirable longer-term social benefits”<sup>31</sup>.

However, the protocol received several critiques, first of all, because it created another layer of bureaucracy to comply with and some researches have been slowed down due to vague and unclear provisions. For some the idea of sharing benefits derived from the access to genetic resources is only in theory a win-win situation, leading to the lawful recognition of benefits to resources’ owners and providing users with clear procedures to comply. In practice however, the process is all but smooth and simple.

When genetic resources are utilized in another country, this triggers a notification to the provider nation via the Access and Benefit-Sharing Clearing-House<sup>32</sup>, then the provider will have to decide whether the use is permitted or not. As a consequence, potential users have to invest time and money to comprehend different legislation across the globe, make sense from incoherent rules, and endure long negotiations needed to reach the required mutually agreed terms<sup>33</sup>.

Besides that, scientific research can be very complex a single product can use several genetic resources in different combinations and locations. Thoroughly compliance requiring permissions for every single substance is sometimes virtually impossible due to the high conformity costs from several national legislations, some unwieldy<sup>34</sup>. In these cases, stopping the research or not complying are the alternatives. Notwithstanding various regulated constituencies (e.g., bio repositories, botanic gardens, natural history museums, microbial collections, and governments) after the protocol needed to establish their own best practices and codes of conduct<sup>35</sup> adding another layer of bureaucracy to comply with.

Overall, the convention was not functioning properly on a purely deregulated basis, the protocol brought a certain level of institutionalization, now the voluntary sustainability standards have a promising role of harmonizing the international environmental governance relating to the implementation of the Nagoya Protocol in a fair and equitable way. Article 20 expressly call for homogeneous frameworks focused on standards<sup>36</sup> and requires parties to maintain an updated collection of these standards.

## 4 Biopiracy a super wicked problem

Illicit financial flows can be defined as cross-border movements of funds that are illegally earned, transferred, or used; this either because the activity themselves are illegal (e.g., corruption, tax evasion); the funds are the results of illegal acts (e.g., smuggling and trafficking in minerals, wildlife, drugs, and people); or their purposes are illegal (e.g., financing of organized crime)<sup>37</sup>. They are explicitly recognized as an obstacle to sustainable development, singled out as a separate target #4 of sustainable development goal SDG16<sup>38</sup>.

<sup>31</sup> BIERMANN, F. et al. ‘Transforming Governance and Institutions for Global Sustainability: Key Insights from the Earth System Governance Project’ (2012) 4 Current Opinion in Environmental Sustainability 51, 123.

<sup>32</sup> UN UM. ‘Absch - Access And Benefit-Sharing Clearing-House’. 2011. Disponível em: <https://Absch.Cbd.Int/>. Accessed: 31 Aug. 2020.

<sup>33</sup> Bruce S Manheim, ‘The Quid Pro Quo Failing Biodiversity and the Discovery of New Products’ (2019) 69 BioScience 856.

<sup>34</sup> WATANABE, Myrna E. ‘The Nagoya Protocol: Big Steps, New Problems’ (2017) 67 BioScience 400.

<sup>35</sup> Watanabe (n 34).

<sup>36</sup> UN. ‘Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity’ (n 9).

<sup>37</sup> WORLD BANK. ‘*Illicit Financial Flows (IFFs)*’. World Bank, 2017. Disponível em: <https://www.worldbank.org/en/topic/financialsector/brief/illicit-financial-flows-iffs>. Accessed: 30 Aug. 2020.

<sup>38</sup> UN. ‘Agenda 2030’ (n 8).



Natural resource extraction is one of the activities that poses challenges to international regulation and law enforcement therefore are prone to enable the action of wrongdoers. Especially challenging is the “conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilisation of genetic resources”<sup>39</sup>. Biopiracy is not a legal term in Brazil but stands for the “appropriation of biological resources and knowledge of these resources for purposes that do not meet the approval or have the consent of groups or individuals who have some prior claim to the resources or knowledge”<sup>40</sup>. So, patenting a chemical or medicament without equitable sharing of benefits with the communities and country from where the original substances were extracted can also be considered biopiracy.

The lack of legal classification to the crime of biopiracy weakens the State’s ability to control it. In the absence of a specific legislation, biopirates “extend their avid claws over the Amazon and take the riches of the genetic heritage and the traditional knowledge without giving anything in return”<sup>41</sup>. Without criminal legislation, the way to punish these conducts are civil limited to the economic resources derived from the development of products, from the genetic resources and the environmental knowledge heritage, specially from the Amazon people.

Curtail this complex problem is nothing simple, on the contrary, it demands a well-tuned orchestration among many opposite interests such as government, environmentalists, agribusiness, pharmaceuticals, industry, scientists, and the communities from where the resources are exploited. And in context of environment, problems are “super wicked”<sup>42</sup> therefore it is hard to identify who has the responsibility, the capacity and potentially the knowledge and motivation to change behaviour toward effective curtailment.

The concept of ‘wickedness’<sup>43</sup> is defined to those problems that share some of the core characteristics: have a single and definitive formulation; depends upon one’s idea for solving it; there is no end: there are no criteria for sufficient understanding and thorough completion. Therefore, solutions are polyvalent, not dichotomist like true or false, good or bad. It is impossible to test the solution: the action is done during the process and maintains its effects. Every solution is definitive, a “one-shot”, because it is impossible to learn by trial and error once all actions leave traces that cannot be undone. There is a infinite set of solutions, every problematic is unique, and each problem is a symptom of another problem. And above all there are always many ways to explain this kind of problem; and they affect the well-being of many.

Levin, Cashore, Bernstein and Auld<sup>44</sup> expand this concept into “super wicked problems” because they present extra difficulties: lack of time, participation of those who are seeking the solution in the aggravation of the problem, ineffectiveness of central authorities and irrational conduct of the players in the long term perspective. Just as Hardin and Ostrom<sup>45</sup> argued in their solution to the tragedy of commons, new institutional arrangements are needed to build the bridges to overcome this kind of contemporary super wicked problems, characterized by non-linear systems where everybody interact in unpredictable ways, is affected reflectively by all actions and face the human tendency to overexploit the resources. Not an easy task to a global society legally structured by parallelism among sovereign states.

## 5 Global Environmental Governance

Over the last decades, the Global Environmental Governance legal framework has been dramatically changed. Scholars and practitioners working on International Environmental Law have witnessed the emergence of many diverse actors and proliferation of rules

<sup>39</sup> UN. ‘Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity’ (n 9) 1.

<sup>40</sup> ALBALA, K. (ed.). *The Sage Encyclopedia Of Food Issues*. Sage Reference, 2015.

<sup>41</sup> POZZETTI, Vc; MENDES, MI Da S. ‘*Biopirataria Na Amazônia E A Ausência De Proteção Jurídica*’. Disponível em: [Http://Ucs.Br/Etc/Revistas/Index.Php/Direitoambiental/Article/View/3691](http://Ucs.Br/Etc/Revistas/Index.Php/Direitoambiental/Article/View/3691). Accessed: 1 Apr. 2021

<sup>42</sup> Biermann and others (n 31).

<sup>43</sup> Horst WJ Rittel and Melvin M Webber, ‘Dilemmas in a General Theory of Planning’ (1973) 4:2 (1973:June) Policy Sciences 155.

<sup>44</sup> LEVIN, K. et al. ‘Overcoming the Tragedy of Super Wicked Problems: Constraining Our Future Selves to Ameliorate Global Climate Change’ (2012) 45 Policy Sciences 123.

<sup>45</sup> Garrett Hardin, ‘The Tragedy of the Commons’ (1968) 162 Science 1243; OSTROM, E. *Governing The Commons: The Evolution Of Institutions For Collective Action*. Cambridge University Press 1990.

originating from many spheres of power and having a potential global impact. A new form of private driven and multilevel global governance is being put in to place, this because globalization has transformed the international context in several ways, mainly by facilitating the articulation of civil society and increasing the role of companies and private entities.

Comparing to the substantial increase in the economic power of companies, many national governments become weak and no longer are in the position of exercising their regulatory power. Stricter rules could represent less investment of the companies in their countries. This decreases the capacity and interest of the national governments to demand from company's compliance with standards especially social and environmental ones. And as production and trade is done in the global market, players facing fewer regulations have advantages over the competitors.

Three basic developments made possible the actual integration of global supply chains necessary for our present global production: revolutionary information technologies innovations in all spheres of society, capital mobility, and risky financial instruments<sup>46</sup>. These characteristics pose challenges to traditional spheres of power and make it possible for new actors to participate in the political arena effectively enough to tilt the balance of power, and cause ripple effects such as consumer concerns and media publicity; as a diffuse effect they can influence government policies and set the international agenda.

Therefore, it increases the space to private environmental governance for example through the adoption of voluntary sustainability standards by companies or non-governmental organizations. They attest about the environmental and/or social compliance of the production processes and the supply chains. Despite not having much direct government intervention, these regulations are interdependent with the legal regulatory framework in place in the State, region, and city they operate. But the public authorities have an important role to stimulate or disincentive this private environmental governance in many ways.

<sup>46</sup> BALDWIN, R. *The Great Convergence Information Technology And The New Globalization*. Belknap Press: An Imprint Of Harvard University Press, 2016.

## 6 Market driven initiatives

In a global chain production, companies outsource the suppliers of products and services using temporary contracts on demand. The company that best manages the vast network of global production logistics wins the most. But in this scenario an outsourced factory that is caught redressed in unethical conduct can jeopardize the full value of the large contractor's brand and indefinitely jeopardize the economic performance of the great economic agent globally. In an event of misconduct in this context the company can eventually face multijurisdictional claims; as well as political and civil society pressures.

This indicates that public expectations can become in a way forceful to the companies interested in these markets, regardless of sovereignty and national borders. Thus, it has the potential of creating a concrete incentive to the adoption of corporate governance practices transnationally if not globally. The adoption of codes of ethics, the submission of the operation to sustainability reports, constant verification of compliance, independent third parties' assessments, and certifications become expected from the ethical business that could effectively mitigate environmental risks.

But what is this myriad of voluntary sustainability standards being adopted? Who is setting the rules? What are their impacts into global trade? How can this be governed?

Private environmental governance, if not well implemented, can cost for example market access through governmental, private, national, foreign, legally binding or voluntaries initiatives. "Clashes between multinational enterprises and nation-states might be growing in frequency and intensity, evoking responses from both the public and the private sectors"<sup>47</sup>. Consumer boycotts, reputational losses and responsibility for noncompliance with expected conduct are not the only risks to be assessed. In terms of competition, more and more companies among themselves face the lack of regulatory fair play.

Interactions on a global scale as well as the planetary human impact on the environment created issues that require cooperation, such as the climate crisis. Countries

<sup>47</sup> VERNON, R. *In The Hurricane's Eye: The Troubled Prospects Of Multinational Enterprises*. Harvard University Press, 2001

increased interdependence and the need for coordination relativized their sovereignty. This highly heterogeneous set of rules leads to a ‘polyarchic’ distribution of power where no single actor, nor even the most powerful nation, has the capacity to impose its own solution without taking into account the others<sup>48</sup>.

Although, high performance with high integrity must be the foundational goals of global business<sup>49</sup>, there is a concrete risk that private environmental governance is used to protect national markets, maintain monopolies and decrease the competitiveness of products or services originated from developing countries, especially from those that are also “shaper nations”<sup>50</sup> whose markets are strong enough to influence global politics and economy such as: China, Brazil, India, Turkey and others

## 7 Voluntary sustainability standards

Internationally enforcement is very rare at the traditional international level due to the lack of centralized enforcement power and states sovereignty. Then, the normal pattern of compliance is rarely the legal constraint. Reputation, reciprocity, retaliation, and prior consent to the legitimacy of the norms are what normally determine compliance (understood as rule observance)<sup>51</sup>.

Reputation is a general organizational attribute that reflects how external stakeholders see the firm and value it as good or bad, and this valuation has many practical effects like the mark-up price for products and services and the possibility of attracting “the best and the brightest”<sup>52</sup>. Roberts and Dowling empirically analysed that good reputation is a valuable asset that allows a firm to achieve persistent profitability in the long term

and to sustain superior financial performance<sup>53</sup>. Reputation is even more relevant for the current intangible economy but still insufficient to understand how international rules become effective and what is necessary to build the “orchestration”<sup>54</sup> needed to orient business decisions, political will, national legislatures, regulatory reforms; and society actions to an ethical path. A standard setter can in some ways buttresses co-ordinated responses to some challenges.

Governing through this kind of “orchestration platforms”<sup>55</sup> corresponds to setting clear quantifiable goals, adequate monitoring, review, or evaluation mechanisms, and building convenient partnerships to take subnational, intergovernmental commitments. The goals and metrics allow valuation of what is working or not, to better plan the future actions and invest the resources. But it has a collaborative intrinsic characteristic that can favour transparency and good governance in many indirect ways, if political interests don’t obfuscate the “technocratic decisions”<sup>56</sup>.

Environmental governance interventions are interconnected in many and complex ways. “Actions in one area or at one scale can, and often does, create ripple effects in other areas/scales. The effects of interventions can be non-linear and can extend beyond the bounds of the original intervention”<sup>57</sup>. To trigger coordinated and effective actions that can lead to transformative change, interventions must demonstrate: capacity to incite path-dependencies<sup>58</sup>, with legal lock ins, potential of scaling to broader contexts, and capacity to generate the desired positive effects in a durable way. Non-states and subnational actors have an important role to articulate such “orchestration platforms”<sup>59</sup>, but also the private initiatives can be very effective.

Partnerships between multi-stakeholder have been more efficient to achieve cooperation and solve problems

<sup>48</sup> SABEL, Cf.; ZEITLIN, J. (ed.) *Experimentalist Governance In The European Union: Towards A New Architecture*. Oxford University Press, 2010.

<sup>49</sup> BAUMANN-PAULY, D.; NOLAN, J. *Business And Human Rights: From Principles To Practice*. Routledge, 2016

<sup>50</sup> HITCHCOCK, Wi.; LEFFLER, Mp.; LEGRO, Jw. (ed.). *Shaper Nations: Strategies For A Changing World*. Harvard University Press, 2016.

<sup>51</sup> HOWSE, R.; TEITEL, R. ‘Beyond Compliance: Rethinking Why International Law Really Matters’ (2010) 1 *Global Policy* 127.

<sup>52</sup> FISHMAN, C. ‘The War For Talent’. *Fast Company*, 31 July 1998. Disponível em: <https://www.fastcompany.com/34512/War-Talent>. Accessed: 20 Jun. 2017

<sup>53</sup> Peter W Roberts and Grahame R Dowling, ‘Corporate Reputation and Sustained Superior Financial Performance’ (2002) 23 *Strategic Management Journal* 1077, 1078.

<sup>54</sup> Hamish van der Ven, Steven Bernstein and Matthew Hoffmann, ‘Valuing the Contributions of Nonstate and Subnational Actors to Climate Governance’ (2017) 17 *Global Environmental Politics* 1.

<sup>55</sup> Ven, Bernstein and Hoffmann (n 54).

<sup>56</sup> Ven, Bernstein and Hoffmann (n 54).

<sup>57</sup> Ven, Bernstein and Hoffmann (n 54) 15.

<sup>58</sup> CASHORE, B. et al. ‘The Role Of Market Forces Across Multiple Pathways’. In: PANWAR, Rajat; KOZAK, Robert; HANSEN, Eric. (ed.), *Forests, Business And Sustainability*. Routledge, 2015.

<sup>59</sup> Ven, Bernstein and Hoffmann (n 54).

ms and voluntarily initiatives undertaken by business, governments, intergovernmental organizations, major groups and others stakeholders in smaller scale but more abundantly can contribute more to the implementation of what was inter-governmentally agreed as sustainable development goals and national commitments. It is from this national, international, public and private intersection that methodologies of standard analysis may be better systematized to deal with the transnational aspects.

There is no doubt that regulation needs to be agile and pragmatic in order to be effective in a business environment based on global value chains, but convergence, coherence and regulatory cooperation are essential to ensure this maintaining competitiveness as well. Voluntary sustainability standards can be efficient to articulate a new type of institutionalism, focused on governance. They play three roles simultaneously: replacing inadequate public regulation, responding to increasingly stringent regulations in areas such as environmental regulation, and being a way to overcome public regulations and provide systematic basis for product differentiation.

To a large extent, the rise in the development of private standards can be perceived as a response to some regulatory measures implemented by markets such as the European and the American, and they are part of broader trends in value chain coordination, in the context of on-going changes in regulatory controls, consumer demand, and multi-stakeholder and pragmatic governance that is needed in international trade.

Private standards can assume one of the four possible combinations in the public / private and compulsory / voluntary regulatory scheme, according to Henson and Humphrey: A1) regulations containing mandatory public standards; B1) voluntary public norms: standards that are created by public bodies, but whose adoption is voluntary; C1) standards developed by the private sector that are then made mandatory by public authorities; and D1) voluntary private standards: developed and implemented by private bodies <sup>60</sup>.

Voluntary private standards are also designated market standards or sustainability standards. Market

standards are more those originated from business or independent bodies and can be different from the international private standards that are elaborated within recognized bodies, such as the International Organization for Standardization – ISO. Private standards are international standards with non-governmental characteristic but they can be recognized by governments and then be accommodated within the multilateral trading system, for example, like it is done in the WTO's Technical Barriers to Trade <sup>61</sup> or the Agreement on the Application of Sanitary and Phytosanitary Measures Agreements <sup>62</sup>. Despite their voluntary nature, such standards can become indeed very practically mandatory for those willing to access certain regulated market and also when recognized by governments they may even be submitted to the TBT and SPS Committees for public periodically reviews <sup>63</sup>.

The compliance with voluntary sustainability standards, to those competing in global value chain, can represent a mark-up price on goods and services certified and labelled because it indicates better quality, it also increases the marketability of sustainable exports to the growing and lucrative responsible markets. And in some high-regulated markets the compliance is a condition to market access. Complying with these standards can contribute to better and more effectively manage the production and distribution, putting in place more sustainable methods what in the aggregate scale of many enterprises doing so locally, contributes to the achievement of sustainable development goals globally.

Voluntary private standards have basically five functions to perform: A2) formulate the operational procedures of a standard; B2) decide on whether or not to adopt a standard; C2) implement the intended rule from compliance procedures, D2) conformity assessment to verify that those who claim to comply with the standard can provide documentary evidence to prove compliance with the standards; and E2) certification, recommendation of corrective measures or discrediting if there is no conformity <sup>64</sup>

<sup>61</sup> Agreement on Technical Barriers to Trade 1994.

<sup>62</sup> Sanitary and Phytosanitary Measures - text of the agreement 1994.

<sup>63</sup> THORSTENSEN, Vh; KOTZIAS, Fv.; VIEIRA, A. *'A Ameaça Dos Padrões Privados À Omc | International Centre For Trade And Sustainable Development'*. 2015 Disponível em: <http://www.ictsd.org/Bridges-News/Pontes/News/A-Amea%C3%A7a-Dos-Padr%C3%B5es-Privados-%C3%A0-Omc>. Accessed: 11 Jun. 2017.

<sup>64</sup> Henson and Humphrey (n 60) 1631.

<sup>60</sup> Spencer Henson and John Humphrey, 'Understanding the Complexities of Private Standards in Global Agri-Food Chains as They Impact Developing Countries' (2010) 46 *The Journal of Development Studies* 1628, 1631.

In addition, there is a thematic division: A3) standards related to food security; B3) regulations requiring compliance with environmental and social standards; C3) technical and quality standards; and, finally, D3) normative regulatory framework, regarding best practices for the development of voluntary private standards.<sup>65</sup>

Voluntary sustainability standards are, therefore a useful and widespread market-based tool that enables businesses and stakeholders to assess the conformity of commodity production, supply chain management and consumption patterns to the Sustainable Development Goals<sup>66</sup>, and so to improve to become more sustainable ones.

Even though private standards are not legally mandatory, they might become de facto mandatory ever since a majority of large buyers demand them. As such, small-scale producers will bear the risk of exclusion from the market if they do not comply with them. Compliance with private standards, in this sense, becomes de facto mandatory and becomes an ever-growing problem mainly for developing countries, which lack infrastructure and public revenue to help their domestic producers and subsidize the costs relating to conformity.

To Terence C. Halliday and Gregory Shaffer<sup>67</sup>, standards are compulsory according to the transnational legal order normativity. In this sense, it demands a legal framework, to avert global problems related to the uncontrolled proliferation of private standards and to deal with their complexity, specially orienting what can be demanded through private standards and by whom. This meta-regulation needs to form structures and indicate bodies to host the negotiation of basic principles, rules, instruments of implementation, measurements of conformity, periodic reviews and dispute settlement mechanism. This would allow the reduction of problems such as “greenwashing”, anticompetitive practices and irregularities in the activities of defining these standards<sup>68</sup>.

Private transnational regulatory organizations are established and governed by actors from civil society, business, and other sectors. They engage directly in transnational governance, adopting standards of conduct for business and other targets on regulatory issues from worker rights to climate change; promoting, monitoring, and enforcing those standards; and conducting related administrative activities. They operate through markets, not through interstate negotiations or hierarchy; they adopt voluntary standards and rely on incentives such as consumer demand, reputational benefits, avoidance of mandatory regulation, and reduced transactions costs to induce participation and compliance. (Abbott, Green, & Keohane, 2016, p. 2).

The efforts of constructing a base rule on which the standards should be created and administered is led by the United Nations Forum on Sustainability Standards (UNFSS), a collaborative work among: Food and Agriculture Organization (FAO), International Trade Centre (ITC), United Nations Conference on Trade and Development (UNCTAD), United Nations Environment Programme (UNEP), and United Nations Industrial Development Organization (UNIDO). UNFSS also relies on the “partnership of many experts representing civil society, producer associations, processors and traders, standard-setting organizations and certifiers, trade negotiators, consumers, and researchers”<sup>69</sup>.

The UNFSS scope is to analyse voluntary sustainability standards and disseminate information about them, “by pooling resources, synchronizing efforts and assuring policy coherence, coordination and collaboration, in line with the “One UN” concept”<sup>70</sup>. The main function of the UNFSS is to provide a forum for multistakeholders, intergovernmental bodies and intra national actors of many levels to facilitate dialogue and knowledge exchange, accessing problems with a practical and collaborative approach. This kind of multilateral articulation fits well into the international legal regime of treaties and protocols about biodiversity.

<sup>65</sup> Henson and Humphrey (n 60) 1631.

<sup>66</sup> UN. ‘Agenda 2030’ (n 8).

<sup>67</sup> HALLIDAY, Tc.; SHAFFER, G. (ed.). *Transnational Legal Orders*. Cambridge University Press, 2015.

<sup>68</sup> THORSTENSEN, Vh; KOTZIAS, Fv; VIEIRA, A. ‘*A Ameaça Dos Padrões Privados À Omc | International Centre For Trade And Sustainable Development*’. 2015 Disponível em: [Http://Www.Ictsd.Org/Bridges-News/Pontes/News/A-Amea%C3%A7a-Dos-Padr%C3%B5es-Privados-%C3%A0-Omc](http://www.ictsd.org/Bridges-News/Pontes/News/A-Amea%C3%A7a-Dos-Padr%C3%B5es-Privados-%C3%A0-Omc). Accessed: 11 Jun. 2017

<sup>69</sup> UNFSS UF ON SS. ‘*Policy Brief: Fostering The Sustainability Of Global Value Chains (Gvcs) Unfss*’, 11 April 2017. Disponível em: [Https://Unfss.Org/2017/04/11/Fostering-The-Sustainability-Of-Global-Value-Chains-Gvcs/](https://unfss.org/2017/04/11/Fostering-The-Sustainability-Of-Global-Value-Chains-Gvcs/). Accessed: 11 Jun. 2017.

<sup>70</sup> UNFSS (n 69) ii.

## 8 Only few standards are on biodiversity

A content analysis over a research sample of 31 voluntary sustainability standards using the software ATLAS.ti shows that the standards rarely consider the Nagoya Protocol in their criteria, not more than 7 refer direct or indirect to it <sup>71</sup>. The International Trade Centre has 272 standards catalogued in the standard map that was used as baseline to that research <sup>72</sup>, before it was filtered only nine sectors more inclined to relate to biodiversity: agriculture, consumer products, fish-aquaculture, fish-wild capture, forestry, industrial products, livestock, processed food, and textiles.

The study concludes that voluntary sustainability standards are lagging behind in relation to the Nagoya Protocol (other conventions like the ILO ones are much more converted into standards). Unfortunately, there are little signs showing an inflexion into this, despite the fact that standards can facilitate a lot the relation between users and local communities, especially providing expertise about their cultural habits, decision making processes, and ultimately creating repeated procedural patterns to be employed by different users <sup>73</sup>.

The Biodiversity Barometer developed by the Union for Ethical Bioproducts, calculated in 2019 that there is a significant market waiting for biodiversity certified products. In their surveys, among 68,000 people from 16 countries, 79% of the consumers believe that having a good impact on biodiversity is a moral obligation for companies. Although only 37% of the interviewed think that companies actually care about these responsibilities. The younger generations are the ones more sensible to the corporate image constructed by ethical business, “They can identify brands that respect biodiversity and value companies that ‘walk the talk’ by

taking action” <sup>74</sup>. Surveyed consumers in all countries have more faith in companies whose sourcing practices are verified by independent organizations, but contrary to what was observed in western countries, the level of trust is higher amongst more educated and more wealthy consumers in four Asian countries <sup>75</sup>.

Despite all their remarkable potential voluntary sustainability standards will never be able to solve all the biodiversity problems. However, they could make its implementation of the Nagoya Protocol, national laws, and different codes of conduct smoother and less burdensome for all the involved stakeholders, and therefore more effective. Collaboration between all the involved is probably the best quality of effectively employing the use of voluntary sustainability standards to track the process of production. Provider of resources and users should work together to design coherent requirements and a transparent method to access compliance, and public authorities can collaborate with this system by recognizing voluntary sustainability standards by the different national agencies relating to biodiversity, labour and environment for example and converting them into public policies of incentives to a greener economy <sup>76</sup>.

## 9 Environmental justice

Voluntary sustainability standard and the Nagoya protocol will never be sufficient to regulate the distribution of biodiversity completely. And no other institution or regulation will be up to the task. Society will always struggle with opposite interests and the fair distribution of resources. But ethical values and combined efforts can organize a systematic way to better achieve the positive results that are expected by the majority of the society. But it is important to bear in mind that the international order has historically favoured the economic power and not the poor, therefore, an equitable and just system to govern biodiversity have to go against this trend and reinforce the rights of the local communities specially if they are indigenous people.

<sup>71</sup> MONACO, A. *Nagoya Protocol And Private Standards. A Study On How Voluntary Sustainability Standards Include Access And Benefit Sharing Obligations In Their Criteria And On Their Potential In Helping The Nagoya Protocol's Implementation*. Wageningen University And Research 2019. disponível em: <https://Edepot.Wur.Nl/517207>.

<sup>72</sup> ITC ITC. *'Sustainability Map'*. 2020. Disponível em: <https://www.sustainabilitymap.org/standards>. Accessed: 31 Aug. 2020

<sup>73</sup> MONACO, A. *Nagoya Protocol And Private Standards. A Study On How Voluntary Sustainability Standards Include Access And Benefit Sharing Obligations In Their Criteria And On Their Potential In Helping The Nagoya Protocol's Implementation*. Wageningen University And Research 2019. disponível em: <https://Edepot.Wur.Nl/517207>. Monaco (n 71).

<sup>74</sup> UEBT U FOR ETHICAL BIOTRADE. *'Uebt Biodiversity Barometer'*. 2020. Disponível em: <http://www.biodiversitybarometer.org/>. Accessed: 31 Aug. 2020

<sup>75</sup> UEBT U FOR ETHICAL BIOTRADE. *'Uebt Biodiversity Barometer'*. 2020. Disponível em: <http://www.biodiversitybarometer.org/>. Accessed: 31 Aug. 2020. UEBT' (n 74).

<sup>76</sup> UNEP (n 5).

The failure of structuring an effective and just system causes harm not only for the current society but to the future generations as well<sup>77</sup>. The effort to structuring polycentric systems for coping with collective action is much more complex than if an external authority would simply determine appropriate actions to be taken, monitors behaviour, and imposes sanctions<sup>78</sup>, but countries reaching consensus to abide themselves to international sanctions is a utopia.

Fortunately, meanwhile, many activities can be undertaken by multiple agents at diverse scales on different levels of hierarchy that cumulatively can make a difference protecting biodiversity. Voluntary sustainability standards and the systematic designed by the Nagoya Protocol can contribute to that. But there is need of constant awareness to avoid this system to be cooped by vested interests that would use it against the interests of the broader society causing damage that in this area can be irreversible.

Thomas Pogge argues that there is a need for an institutional moral analyses<sup>79</sup> to constant diagnose if the design of the system is enabling damages that should and could be avoided, even it is not evident the cause and effect between some facts. Regarding environmental rights seldom the causal effect is clear, normally the consequences of the actions are diffuse and therefore hard to attribute responsibility by the regular linear cause-effect way.

The concept of global justice ends the dichotomy among intra-national and international sphere, even if the international actions are legal, they can be unjust if they justify one country ignoring unethical attitudes taken by their counterparts regarding their people<sup>80</sup>. The same if a country is profiting from the depletion of the natural resources and the biodiversity of the others.

<sup>77</sup> LEWIS, B. 'The Rights of Future Generations within the Post-Paris Climate Regime' (2018) 7 *Transnational Environmental Law* 69.

<sup>78</sup> OSTROM, Elinor. 'Polycentric Systems for Coping with Collective Action and Global Environmental Change' (2010) 20 *Global Environmental Change* 550.

<sup>79</sup> POGGE, Tw. '*A New Deal In Global Health And International Tax Justice*' 2020. Disponível em: <https://www.linkedin.com/pulse/new-deal-global-health-international-tax-justice-thomas-pogge/?trackingid=Bvnjhihg0apmdeaxucfagw%3d%3d>. Accessed: 30 Jul. 2020

<sup>80</sup> POGGE, Tw. '*¿Qué Es La Justicia Global?*' 2008. Disponível em: <https://revistas.uexternado.edu.co/index.php/ecoins/article/view/326>. Accessed: 31 Aug. 2020.

Another important point is that there is a "deep tension between presenting moral ambitions in the language of human rights and presenting them in the language of development goals"<sup>81</sup>, sustainability standards, or notifications to the Access and Benefit-Sharing Clearing-House. Human rights deprivations must be ended right away; on the contrary goals, targets, standards and notifications exist in an incremental approach system to overcome deprivations on a long term with a step-by-step approach. "A group can decide collectively what to aim for and how to get there. But, to have a common goal, this group must have a shared understanding of who is to do what toward implementation<sup>82</sup> this trick in the wording of the rights can curtail the implementation of the appropriate measures and justify corporate behaviours that are merely greenwashing<sup>83</sup>

## 10 Conclusion

Biodiversity and their genetic resources have specific characteristics that need to be considered when designing institutional, legal or governance tools to mitigate their degradation. In the case of access and benefit sharing relating to genetic resources that are used as input for research and development in different industrial sectors, the discussion cannot be limited to the compatibility of ecosystems and institutions established to manage the impact that humans have on ecosystems, but it has to take into consideration the specific characteristics genetic resources reveal when they enter the production process as well as the traditional knowledge gained through generations that enabled such benefits.

But investments in biodiversity are too low to sustain the resource by market forces, liberalism will not lead to a fair share of benefits, appropriate policies and institutions to tilt the balance on the right way are still missing, despite the increased development on the biodiversity regime from 1992 onwards.

<sup>81</sup> Thomas Pogge and Mitu Sengupta, 'Assessing the Sustainable Development Goals from a Human Rights Perspective' (2016) 32 *Journal of International and Comparative Social Policy* 83.

<sup>82</sup> Pogge and Sengupta (n 81).

<sup>83</sup> Frances Bowen and J Alberto Aragon-Correa, 'Greenwashing in Corporate Environmentalism Research and Practice: The Importance of What We Say and Do' (2014) 27 *Organization & Environment* 107.

For companies, universities, public research centres, and labs that use genetic resources, clarity and predictability about the rules that govern the theme at the international level is central. The Nagoya Protocol can create procedures and facilitate access, promote harmonization of the possibilities of sharing benefits and allow transparency on prior and informed consent from local communities. And an expanded management using the compliance mechanisms of voluntary sustainability standards can contribute to harmonize national and international agendas.

The real benefits of such decentralized governance would be reaped in view of the better capacity to protect biodiversity, avoid barriers to the use of *ex situ* genetic resources in agriculture, and promote a realistic vision that fosters innovation based on the sustainable use of biodiversity resources and traditional knowledge.

But if voluntary sustainability standards can be on one hand exploited as competitive economic differentials, with the potential to positively impact this dynamic where firms that adopt them are inserted, it is also a possibility that they become new forms of internal, private, regulatory barriers to trade negatively impacting international trade.

In any case a joint and coordinated effort should be for the harmony between the methodologies adopted by private and public standards, so that they are not arbitrary or are liable to favour only some groups or convey vested interests.

## References

ALBALA, K. (ed.). *The Sage Encyclopedia Of Food Issues*. Sage Reference, 2015.

BALDWIN, R. *The Great Convergence Information Technology And The New Globalization*. Belknap Press: An Imprint Of Harvard University Press, 2016.

BAUMANN-PAULY, D.; NOLAN, J. *Business And Human Rights: From Principles To Practice*. Routledge, 2016.

BIERMANN, F. et al. 'Transforming Governance And Institutions For Global Sustainability: Key Insights From The Earth System Governance Project' (2012) 4 *Current Opinion In Environmental Sustainability* 51

BOGDANSKI, A. et al. *Guidance Note On Monitoring The Sustainability Of The Bioeconomy At A Country Or Macro-Regional Level*. 2021. disponível em: <https://www.fao.org/Documents/Card/En/C/Cb7437en>. Accessed: 10 Dec. 2021

BOWEN, F.; ARAGON-CORREA, Ja, 'Greenwashing In Corporate Environmentalism Research And Practice: The Importance Of What We Say And Do' (2014) 27 *Organization & Environment* 107.

BRASIL. *Lei Nº 13123/2015*. Regulamenta Convenção Sobre Diversidade Biológica - Cbd, Dispõe Sobre O Acesso Ao Patrimônio Genético, Sobre A Proteção E O Acesso Ao Conhecimento Tradicional Associado E Sobre A Repartição De Benefícios Para Conservação E Uso Sustentável Da Biodiversidade 2015 [L13123/2015]

CASHORE, B. et al. 'The Role Of Market Forces Across Multiple Pathways'. In: PANWAR, Rajat; KOZAK, Robert; HANSEN, Eric. (ed.), *Forests, Business And Sustainability*. Routledge, 2015.

CELI, A. 'Análisis Jurídico Del Ordenamiento Jurídico Inetrnacional Sobre Protección De Los Recursos Genéticos: Desafíos Y Perspectivas En Uruguay A Partir De La Implementación Del Protocolo De Nagoya' (2016) 13 *Revista De Direito Internacional* 117

D'AMATO, D. et al. 'Green, Circular, Bio Economy: A Comparative Analysis Of Sustainability Avenues' (2017) 168 *Journal Of Cleaner Production* 716

DEDEURWAERDERE, T. et al. 'Chapter 13. Governing Global Scientific Research Commons Under The Nagoya Protocol'. In: MORGERA, Elisa; BUCK, Matthias; TSIOUMANI, Elsa. (ed.). *The 2010 Nagoya Protocol On Access And Benefit-Sharing In Perspective*. Brill | Nijhoff 2013. Disponível em: [https://brill.com/view/book/edcoll/9789004217201/B9789004217201\\_015.xml](https://brill.com/view/book/edcoll/9789004217201/B9789004217201_015.xml). Accessed: 31 Aug. 2020

FAO. *Guide On Incentives For Responsible Investment In Agriculture And Food Systems*. 2021. Disponível em: <http://www.fao.org/3/Cb3933en/Cb3933en.pdf>. Accessed: 1 Jul. 2021.

FISHMAN, C. 'The War For Talent'. *Fast Company*, 31 July 1998. Disponível em: <https://www.fastcompany.com/34512/war-talent>. Accessed: 20 Jun. 2017

FITTIPALDY, Mep De M. 'Biodiversidade E Conhecimentos Tradicionais No Contexto Da Biopirataria E



- Dos Marcos Legais' (2020) 7 *South American Journal Of Basic Education, Technical And Technological* 648.
- HALLIDAY, Tc.; SHAFFER, G. (ed.). *Transnational Legal Orders*. Cambridge University Press, 2015.
- HARDIN, G. 'The Tragedy Of The Commons' (1968) 162 *Science* 1243
- HENSON, S.; HUMPHREY, J. 'Understanding The Complexities Of Private Standards In Global Agri-Food Chains As They Impact Developing Countries' (2010) 46 *The Journal Of Development Studies* 1628
- HITCHCOCK, Wi.; LEFFLER, Mp.; LEGRO, Jw. (ed.). *Shaper Nations: Strategies For A Changing World*. Harvard University Press, 2016.
- HOWSE, R.; TEITEL, R. 'Beyond Compliance: Rethinking Why International Law Really Matters' (2010) 1 *Global Policy* 127
- IPEA. 'Comércio Exterior De Produtos Do Agronegócio: Balanço De 2020 E Perspectivas Para 2021'. 2021. Disponível em: [https://www.ipea.gov.br/portal/images/stories/pdfs/conjuntura/210331\\_cc\\_50\\_Nota\\_29\\_setor\\_externo\\_agro.pdf](https://www.ipea.gov.br/portal/images/stories/pdfs/conjuntura/210331_cc_50_Nota_29_setor_externo_agro.pdf).
- ITC ITC. 'Sustainability Map'. 2020. Disponível em: <https://www.sustainabilitymap.org/standards>. Accessed: 31 Aug. 2020
- KESWANI, C. *Bioeconomy For Sustainable Development*. Springer, 2020.
- KLEINSCHMIT, D. et al. 'Environmental Concerns In Political Bioeconomy Discourses' 15
- LEVIN, K. et al. 'Overcoming The Tragedy Of Super Wicked Problems: Constraining Our Future Selves To Ameliorate Global Climate Change' (2012) 45 *Policy Sciences* 123
- LEWIS, B. 'The Rights Of Future Generations Within The Post-Paris Climate Regime' (2018) 7 *Transnational Environmental Law* 69
- MANHEIM, Bs. 'The Quid Pro Quo Failing Biodiversity And The Discovery Of New Products' (2019) 69 *Bioscience* 856
- MONACO, A. 'Nagoya Protocol And Private Standards. A Study On How Voluntary Sustainability Standars Include Access And Benefit Sharing Obligations In Their Criteria And On Their Potential In Helping The Nagoya Protocol's Implementation'. Wageningen University And Research 2019. disponível em: <https://edepot.wur.nl/517207>.
- MORGERA, E. 'The Need For An International Legal Concept Of Fair And Equitable Benefit Sharing' (2016) 27 *European Journal Of International Law* 353
- OSTROM, E. *Governing The Commons: The Evolution Of Institutions For Collective Action*. Cambridge University Press 1990.
- OSTROM, E. 'Polycentric Systems For Coping With Collective Action And Global Environmental Change' (2010) 20 *Global Environmental Change* 550
- PIETZSCH, J. *Bioeconomy For Beginners*. Springer, 2020. Disponível em: <https://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?P=6132421>. Accessed: 6 Jan. 2021
- POGGE, T.; SENGUPTA, M. 'Assessing The Sustainable Development Goals From A Human Rights Perspective' (2016) 32 *Journal Of International And Comparative Social Policy* 83
- POGGE, Tw. '¿Qué Es La Justicia Global?' 2008. Disponível em: <https://revistas.uexternado.edu.co/index.php/ecoins/article/view/326>. Accessed: 31 Aug. 2020
- POGGE, Tw. 'A New Deal In Global Health And International Tax Justice' 2020. Disponível em: <https://www.linkedin.com/pulse/new-deal-global-health-international-tax-justice-thomas-pogge/?trackingid=Bvnjhihg0apmdeaxucfagw%3d%3d>. Accessed: 30 Jul. 2020
- POZZETTI, Vc; MENDES, Mi Da S. 'Biopirataria Na Amazônia E A Ausência De Proteção Jurídica'. Disponível em: <http://ucs.br/etc/revistas/index.php/direito-ambiental/article/view/3691>. Accessed: 1 Apr. 2021
- RICHERZHAGEN C, 'The Nagoya Protocol: Fragmentation Or Consolidation?' (2014) 3 *Resources* 135
- RITTEL Hwj And Webber Mm, 'Dilemmas In A General Theory Of Planning' (1973) 4:2 (1973:June) *Policy Sciences* 155
- ROBERTS Pw And Dowling Gr, 'Corporate Reputation And Sustained Superior Financial Performance' (2002) 23 *Strategic Management Journal* 1077
- SABEL, Cf.; ZEITLIN, J. (ed.). *Experimentalist Governance In The European Union: Towards A New Architecture*. Oxford University Press, 2010.

- SCARLAT, N. et al. 'The Role Of Biomass And Bioenergy In A Future Bioeconomy: Policies And Facts' (2015) 15 *Environmental Development* 3
- THORSTENSEN, Vh; KOTZIAS, Fv.; VIEIRA, A. 'A Ameaça Dos Padrões Privados À Omc | *International Centre For Trade And Sustainable Development*'. 2015 Disponível em: [Http://Www.Ictsd.Org/Bridges-News/Pontes/News/A-Amea%C3%A7a-Dos-Padr%C3%B5es-Privados-%C3%A0-Omc](http://www.ictsd.org/Bridges-News/Pontes/News/A-Amea%C3%A7a-Dos-Padr%C3%B5es-Privados-%C3%A0-Omc). Accessed: 11 Jun. 2017
- UEBT U FOR ETHICAL BIOTRADE. 'Uebt Biodiversity Barometer'. 2020. Disponível em: [Http://Www.Biodiversitybarometer.Org/](http://www.biodiversitybarometer.org/). Accessed: 31 Aug. 2020
- UN UM. 'Cbd - Convention On Biological Diversity'. Disponível em: [Https://Www.Cbd.Int/Doc/Legal/Cbd-En.Pdf](https://www.cbd.int/doc/legal/cbd-en.pdf)
- UN UM. 'Absch - Access And Benefit-Sharing Clearing-House'. 2011. Disponível em: [Https://Absch.Cbd.Int/](https://absch.cbd.int/). Accessed: 31 Aug. 2020
- UN UM. 'Nagoya Protocol On Access To Genetic Resources And The Fair And Equitable Sharing Of Benefits Arising From Their Utilization To The Convention On Biological Diversity'. Disponível em: [Https://Www.Cbd.Int/Abs/Doc/Protocol/Nagoya-Protocol-En.Pdf](https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf)
- UN UM. 'Agenda 2030'. Disponível em: Disponível em: [Http://Www.Un.Org/Ga/Search/View\\_Doc.Asp?Symbol=A/Res/70/1&Lang=E](http://www.un.org/ga/search/view_doc.asp?symbol=A/Res/70/1&lang=E). Accessed: 12 Jun. 2017
- UNEP (Ed), *Towards A Green Economy: Pathways To Sustainable Development And Poverty Eradication* Unep, 2011
- UNEP-WCMC UNEPWCMC. 'Megadiverse Countries Definition | *Biodiversity A-Z*'. 1988. Disponível em: [Https://Www.Biodiversitya-Z.Org/Content/Megadiverse-Countries](https://www.biodiversitya-z.org/content/megadiverse-countries). Accessed: 1 Feb. 2021
- UNFSS UF ON SS. 'Policy Brief: Fostering The Sustainability Of Global Value Chains (Gvcs)' *Unfss*, 11 April 2017. Disponível em: [Https://Unfss.Org/2017/04/11/Fostering-The-Sustainability-Of-Global-Value-Chains-Gvcs/](https://unfss.org/2017/04/11/fostering-the-sustainability-of-global-value-chains-gvcs/). Accessed: 11 Jun. 2017
- VEN H VAN DER, Bernstein S.; HOFFMANN, M. 'Valuing The Contributions Of Nonstate And Subnational Actors To Climate Governance' (2017) 17 *Global Environmental Politics* 1
- VERNON, R. *In The Hurricane's Eye: The Troubled Prospects Of Multinational Enterprises*. Harvard University Press, 2001.
- WATANABE, Me. 'The Nagoya Protocol: Big Steps, New Problems' (2017) 67 *Bioscience* 400
- WORLD BANK. 'Illicit Financial Flows (IFFs)'. World Bank, 2017. Disponível em: [Https://Www.Worldbank.Org/En/Topic/Financialsector/Brief/Illicit-Financial-Flows-Iffs](https://www.worldbank.org/en/topic/financialsector/brief/illicit-financial-flows-iffs). Accessed: 30 Aug. 2020.