

Forum:	Special Conference (SPECON)
Issue:	Preventing Biopiracy of Indigenous Knowledge
Student Officer:	Evangelos Lakkos
Position:	Deputy President

PERSONAL INTRODUCTION

Dear delegates,

My name is Evangelos Lakkos, I am a student at Doukas School, and I will be serving as one of your Deputy Presidents in the Special Conference on the Paradox of Progress of the 13th annual Platon School Model United Nations conference. It is with great excitement that I take on this role and I hope that we will have productive debates.

As a recent economic migrant from the UK, I was eager to broaden my horizons in Greece and MUN has provided me with the perfect way of doing this. Being an advocate of debate and purposeful discussion for the resolution of all issues, MUN was an effective medium for me to exercise these skills weekly, representing a multitude of countries on a broad number of topics from an extensive plethora of committees. However, despite all this, nothing compares to my first time participating in a conference, something I will remember for a long time to come. I truly wish that all of you experience the same feeling during this conference. And for all the new delegates, it is an honour to be a part of the start of your MUN career.

This study guide will analyse the complex issue of Biopiracy and the way in which it poses a problem to all of us, as part of an ever-expanding global population. It is a topic of great significance, and one that has a variety of intricate difficulties pertaining to its solution. Also, it associates with this year's theme as it draws a contradiction between global progress and exclusive rights to knowledge. I urge you all to conduct your own research on this topic in order to be able to successfully take part in the debate. If you have any questions regarding the study guide and its content, please do not hesitate to contact me at e.lekkos1908@gmail.com. I cannot wait to meet you all in March.

Best regards,
Evangelos Lakkos

INTRODUCTION

Biopiracy is when people or companies from More Economically Developed Countries (MEDCs) take valuable resources like plants, indigenous knowledge, or medicines from Less Economically Developed Countries (LEDCs) without asking permission or providing payment. Exploiting these resources for financial gain while disregarding the rights of the surrounding communities and the environment is unfair and unethical because it exploits indigenous knowledge and resources of more limited communities without their consent or through monetary payment. There are some international agreements and laws to protect the rights of the local people and make sure they receive fair compensation for the use of their resources to address this issue but the problem persists to this day.

Indigenous knowledge is the wisdom and its practical uses passed down through generations in native communities across the globe. It has been developed by local peoples using their surroundings to survive through the challenges they have faced living in nature. Respecting and using this knowledge can be beneficial for everyone, although some people believe that it should be a protected right of these indigenous groups.

Biopiracy is a significant global issue for several reasons. Firstly, it results in a local loss of knowledge as many indigenous communities have their knowledge of their surroundings stripped away from them by corporations looking to make a profit. Such actions can harm the traditions of indigenous groups as well. Secondly, acts of biopiracy can be harmful to nature as some species of plants get overused. This can be especially dangerous for endangered species as they can be at risk of being completely wiped out. Also, biopiracy helps to increase the wealth gap between people on an international level. When large businesses commit acts of biopiracy, they often do not pay the local communities fair amounts for the revenue they make as a result of their biopiracy. For all the above reasons, the issue of biopiracy affects us all. Therefore, it is important to come together as a global community to resolve it.

This issue is well connected to the conference theme “The Paradox of Progress” as although some countries and corporations may benefit from the action of biopiracy by combining indigenous knowledge and natural resources with modern technology, others do not benefit because their resources are plundered and their various traditional practices may be misused by communal outsiders. With this topic heavily stemming from the basic ideas of colonialism, we must also question what is determined as fair regarding this issue. This can also be associated with the elementary theories of opportunism against collective responsibility, an argument that is in itself a pressing matter of worldwide interest.

DEFINITION OF KEY TERMS

Biopiracy

The theft or misappropriation of genetic resources and traditional [indigenous] knowledge through the intellectual property system. It also encompasses unauthorised or uncompensated collection of genetic resources for commercial purposes.¹

Indigenous Knowledge

Indigenous knowledge is defined as the unique, traditional, local knowledge existing within, and developed around the specific conditions of women and men indigenous to a geographic area.²

Bioprospecting

Bioprospecting is defined as a systematic and organised search for useful products derived from bioresources including plants, microorganisms, animals, etc., that can be developed further for commercialisation and overall benefits of society.³

Biodiversity

The number and diversity of distinct living species within the world or a particular environment.

Natural Resources

Industrial materials and capacities supplied by nature, such as mineral deposits and waterpower.

Intellectual Property

A term with legal connotations that defines property that is the product of the creative imagination and cannot therefore be touched but may still be owned, such as a copyright or a patent.

Greenwashing

A form of misinformation often used by companies to entice a “green” consumer into buying products or services from that company. Companies promising to be sustainable, biodegradable or environmentally conscious sometimes fail to meet the promises they make to consumers.⁴

¹ Silva, Daniella. “Biopiracy: The Largely Lawless Plundering of Earth’s Genetic Wealth.” *Landscape News*, 15 Dec. 2020, <https://news.globallandscapesforum.org/48905/biopiracy-the-largely-lawless-plundering-of-earths-genetic-wealth/>

² Science Direct. “Indigenous Knowledge - an Overview | ScienceDirect Topics.” *Www.sciencedirect.com*, Science Direct, www.sciencedirect.com/topics/earth-and-planetary-sciences/indigenous-knowledge#:~:text=Indigenous%20knowledge%20refers%20to%20understandings

³ Science Direct. “Bioprospecting - an Overview | ScienceDirect Topics.” *Www.sciencedirect.com*, Science Direct, www.sciencedirect.com/topics/medicine-and-dentistry/bioprospecting

⁴ Gibbens, Sarah. “Is Your Favourite “Green” Product as Eco-Friendly as It Claims to Be?” *Environment*, National Geographic, 22 Nov. 2022, www.nationalgeographic.com/environment/article/what-is-greenwashing-how-to-spot

Gene Rush

Refers to the new era of biotechnology in which scientists can extract specific genes from living organisms (e.g., plants, animals, humans, viruses, bacteria, fungi etc.) as raw materials. It is seen as a crucial step in the development and evolution of our understanding of the natural world, and, therefore, regarded as a ground-breaking sector of natural sciences.

BACKGROUND INFORMATION

Overview of biopiracy

Background information

Biopiracy refers to the unethical or unauthorised exploitation and commercialization of biological resources, traditional knowledge, or cultural practices by individuals, corporations, or organisations without providing fair compensation or recognition to the communities and countries from which these resources originated. Being able to recall the general history of the issue is vital seeing as past actions of biopiracy are still relevant today. Since the era of colonialism, it has been a common and accepted practice for researchers or companies from MEDCs to take advantage of the biodiversity and traditional knowledge of indigenous or local communities from LEDCs. They extract biological resources, like plants, microorganisms, or traditional medicines, and use them for profit without obtaining proper consent from the knowledge-holders or compensating them fairly through large-scale industrial manufacturing to produce goods that will eventually turn a profit for the corporations that take part in such practices.

One such brutal example of colonial biopiracy was the Triangular Slave Trade of the 16th-19th centuries, where slaves were transported from Africa to the New World, along with all their knowledge of how to grow different crops; such as rice, wheat and other grains. This continues to have far-reaching socioeconomic effects to this day, affecting both the countries that lost their populations centuries ago, as well as strifing much division in the communities that remained in the Caribbean and North America after slavery was abolished. With such devastating effects on humanity as a whole, knowing the methods used by researchers or companies from MEDCs to take advantage of people and resources in LEDCs is useful as it can help the global community collude together to find solutions that counter these methods, and ultimately put an end to biopiracy.

Biopiracy in the Colonialist Era

Biopiracy has been historically associated with colonialism, where developing, resource-rich countries and indigenous populations would be exploited by technologically advanced countries without permission. There continues to be both a historical and ongoing impact of colonialism on the exploitation of biological resources and traditional knowledge of indigenous and local

communities through multiple socioeconomic effects; such as resource drain, wealth disparities, loss of sustainable practices, and identity and culture erosion. It is unfortunate that many formerly colonised countries have had a multitude of their resources forcibly removed over the centuries and in some cases, this practice has been maintained even in the present day. This underscores how the legacy of colonialism has influenced the dynamics of biopiracy in several ways. Endeavours to correct past wrongs, advance the rights of indigenous and local populations, and create just and equitable frameworks for the exploitation of biological resources and traditional knowledge are all made necessary by acknowledging the impact of colonialism on biopiracy.

Early European explorers and researchers bear the brunt of the blame for beginning this crude practice in their voyages as they searched the foreign lands they visited for valuable and useful commodities they could ship back home to sell. Marco Polo's journey through mainland Asia led him to bring back many spices to Europe that would be used for medicinal purposes. These spices he stole from the local communities, pillaging supplies that were often scarce anyway, damaging local agriculture and trade along the way. Christopher Columbus further expanded on Polo's discoveries through the "Spice Route" with the help of the Spanish Court and conducted Europe's first contact with the Caribbean, Central and South America. From these travels, he plundered gold, silver, diamonds, sugar, coffee and cocoa from the local tribes - all of which he brought back to Europe, without compensating the indigenous populations in the slightest. Sir Walter Raleigh was the reason that the potato was introduced to European diets, as well as tobacco. Yet not a single one of these explorers, or many others like them, gave credit to the indigenous populace that had been using these commodities for hundreds of years already. Furthermore, their discoveries gave European countries the belief that they could travel anywhere in the world and forcibly take resources to their liking, simply because they could overpower local communities; something that has now been ingrained into the ethos of many such MEDCs, who continue to exploit LEDCs today. This remains an issue even now, as some countries and large corporations around the world engage in the trade of natural resources that have often been illegally or unsafely outsourced, to create products from antibiotics, toiletries, and lunch boxes to our clothes, cars, televisions, computers and refrigerators.

Conflicting Views on Biopiracy

Critics argue that biopiracy raises ethical and legal concerns, as it can lead to the exploitation of vulnerable communities and indigenous peoples who may lack legal or physical protection for their traditional knowledge and resources. This is significant as unethical exploitation of such communities poses an extreme threat to their established way of life, something that could result in the complete extinction of processes, knowledge and even whole cultures. The practice can also lead to environmental degradation and the loss of biodiversity in the regions where these resources are sourced. Coupled with

our ever-worsening climate crisis, a practice such as biopiracy is only going to bring our world closer and closer to destruction, signalling the end of species, habitats and whole ecosystems. Also, many have raised concerns that corporations and/or researchers achieve high profits from the commercial success of biopiracy without ensuring the benefits of the resources and the knowledge they have obtained from indigenous groups are shared equally. As this is a clear case of economic exploitation, it can lead to the wealth gap between MEDCs and LEDCs to increase, due to the fact that companies from MEDCs exploit foreign communities, prohibiting any similar companies in LEDCs from collaborating with local communities for mutual benefit. Additionally, claims have been made that highlight the direct correlation between biopiracy and loss of biodiversity as mass exploitation of natural resources without accompanying sustainable practices has been found to lead to severe ecological degradation. The general lack of international regulations surrounding the matter means that many indigenous groups are stranded without any type of safeguard to protect their rights and interests. All of these are a few of the many reasons for why preventing the action of biopiracy is a critical step forward for protecting humanity.

Supporters of this practice claim that this knowledge and these resources must be shared. They assert that everyone should have the right to access the planet's resources. Their reasoning behind this is that any problems they may face may have already been solved in other areas of the world, therefore, any solutions that may come from indigenous knowledge should be taken by global corporations and shared, even if the only economic return goes to the corporation. Biopiracy allows for the efficient use of resources from different parts of the world. This can lead to greater global access and development to products and technologies that might not have been developed otherwise. Such advancements in technology could lead to a better future for all, as existing problems faced by society today (such as certain medical ailments) are solved. Furthermore, they allege that the commercialization of biopiracy can foster international collaboration between researchers and institutions from different countries. Considering the current crisis state of the world, they argue, any sort of international cooperation can only be a good thing, and would probably reduce tensions between competing countries. Moreover, proponents firmly believe that the potential profit from acts of biopiracy can and should provide incentives for corporations and researchers to invest in the discovery and development of indigenous technologies. This would lead to advancements that benefit society as a whole. Conjointly, the commercialization brought about by biopiracy could possibly spur economic growth in MEDCs and LEDCs alike as it would provide up-and-coming industries with countless job opportunities for local inhabitants and economic migrants attracted by modern commerce and large foreign corporations, even at the expense of smaller local businesses.

Overview of indigenous knowledge

Background information

Indigenous knowledge refers to the expertise and wisdom that has been inherited over many generations in particular native or local communities around the globe. It includes their knowledge and practices about the natural world, customs and medicines among other things. It may not be strictly scientific knowledge, but it has just as much value and can be used to address problems such as climate change, agriculture, infrastructure development, and natural resource management. It is crucial to recognise and respect this knowledge, which can also be useful to the rest of the world if applied carefully and with the approval of the involved indigenous communities. However, if this knowledge is not recognised and respected, then, whole ecosystems could be wiped out, posing a severe threat to all humanity, not just those living in indigenous groups; which is part of the global push to end biopiracy.

Indigenous knowledge has been kept and passed down through many generations within native or local communities around the world. This knowledge, rooted in nature surrounding indigenous groups, contains religious rituals and medicinal practices among other things. It has been shared through oral tradition for centuries, from father to son and mother to daughter. Each indigenous group worldwide has its customs. Some have died out, but others have stood the test of time. To stop more indigenous knowledge from being lost, we must act as one. Indigenous knowledge has been meticulously preserved and passed down through countless generations within native or local communities worldwide. This knowledge, deeply rooted in the natural world surrounding indigenous groups, encompasses traditional customs, medicinal practices, and even intricate ecological systems.

Indigenous knowledge can lead to practices that are good for the environment. For instance, the indigenous communities of the Amazon have developed sustainable farming techniques that work harmoniously with the rainforest ecosystem. That being noted, the threat of mass agriculture in the Amazon rainforest by large companies means that some Amazonian tribes and their way of life are in danger of becoming obsolete.

Although this knowledge may not align with Western scientific paradigms, it still holds certain value in today's fast-paced world. It offers many insights into different way to combat global issues such as climate change, sustainable agriculture, infrastructure development, and natural resource management. Techniques such as agroforestry, crop rotation, and water management can contribute to soil fertility, biodiversity conservation, and food security. Examples range from the Batwa indigenous group in Uganda that has joined up with communities to develop sustainable watershed management plans⁵ to

⁵ PERRONI, EVA. "Five Indigenous Farming Practices Enhancing Food Security - Resilience." *Resilience*, 14 Aug. 2017, www.resilience.org/stories/2017-08-14/five-indigenous-farming-practices-enhancing-food-security/

the Native Americans that have planted more than one crop together in a practice known as intercropping.⁶ Clearly, this knowledge and the practices that arise from it are invaluable and very much worth protecting.

Indigenous knowledge also emphasizes the importance of preserving crop varieties and genetic diversity through infrastructure development and innovative agricultural designs, something that used to be necessary for small nomadic communities before trade became common. This can prove to be valuable in the face of climate change and emerging pests and diseases. One example of this comes from the Meskwaki Tribe in Central Iowa, which has a tradition of farming and preserving seeds. They cultivate crops like corn, beans, and squash, known as the “three sisters,” in their Red Earth Garden, growing them together to reflect the tribe’s understanding of the relationship between these plants.⁷ Another example of this comes from the Aborigines from Australia, who have managed to demonstrate an understanding of engineering, physics, and aquaculture in the design of elaborate stone fish traps and eel farms.⁸

Recognizing and respecting this knowledge is crucial as it can help indigenous communities and has the potential to benefit the global community when applied with the consent of those who safeguard and have advanced it over centuries and maybe even millennia. One instance of indigenous groups being important to the global community relates to biodiversity protection as a whole. Although they only make up 5% of the world population, indigenous peoples protect 80% of global biodiversity.⁹ Failing to acknowledge and honour indigenous knowledge poses significant risks for everybody across the globe, as it could lead to its exploitation and misappropriation by large companies. This can endanger entire ecosystems and threaten the well-being of all humanity. The theme of preventing biopiracy comes into play here.

Indigenous knowledge has served as the backbone of most, if not all, traditional societies, guiding their interactions with their local environment, and sustaining their livelihoods for centuries after centuries. For example, the indigenous Maasai people of East Africa practise a nomadic lifestyle that allows them to live in harmony with nature. Preventing the biopiracy of indigenous knowledge requires addressing the historical injustices against indigenous peoples and recognizing the importance of their knowledge systems in shaping

⁶ Heim, Tracy. “The Indigenous Origins of Regenerative Agriculture.” *National Farmers Union*, 12 Oct. 2020, [nfu.org/2020/10/12/the-indigenous-origins-of-regenerative-agriculture/](https://www.nfu.org/2020/10/12/the-indigenous-origins-of-regenerative-agriculture/)

⁷ Cosier, Susan. “For Thousands of Years, Indigenous Tribes Have Been Planting for the Future.” *NRDC*, 30 Nov. 2021, www.nrdc.org/stories/thousands-years-indigenous-tribes-have-been-planting-future

⁸ Delacey, Lynda. “Aboriginal Inventions: 10 Enduring Innovations - Australian Geographic.” *Australian Geographic*, 17 Aug. 2018, www.australiangeographic.com.au/topics/history-culture/2015/03/aboriginal-australian-inventions/

⁹ The Climate Reality Project. “How Indigenous Knowledge Can Help Us Combat Climate Change.” *The Climate Reality Project*, 4 Aug. 2021, www.climaterealityproject.org/blog/how-indigenous-knowledge-can-help-us-combat-climate-change

sustainable and fair futures for all. Without such actions, the welfare of our planet and civilization as we know it could be at risk of destruction.

In the contemporary era, efforts to prevent the biopiracy of indigenous knowledge must be grounded in the principles of fairness, justice, and respect for all people. For instance, the Nagoya Protocol on Access and Benefit Sharing is an international agreement aimed at the fair sharing of benefits arising from the utilization of genetic resources, thereby preventing biopiracy. This values and preserves the knowledge, practices, and resources that constitute a way of survival for indigenous communities around the world and progressing scientific development further.

Protection of Indigenous Knowledge

At the centre of the issue is the idea of ownership using patents and trademarks. Patents are “exclusive rights granted for an invention, which is a product or a process that provides...a new way of doing something or offers a new...solution to a problem.”¹⁰ Trademarks are “recognizable insignia, phrases, words, or symbols that denote a specific product and legally differentiate it from all other products of its kind.”¹¹ These are contested by trade organizations and businesses. However, for most indigenous groups, owning a patent for a living organism in their environment, such as a plant or a fungus, is a challenge. This is made harder by the ever-changing nature of these organisms, making it more difficult to finance patents. There is a similar situation with indigenous knowledge and the practices that come from it.

While they can be protected under IP patents, as provided by WIPO, many indigenous communities lack the resources, technology, and legal means needed for patent claims. In contrast, corporations with financial resources and advanced technology can exploit indigenous knowledge for their motives. For example, there has been criticism over the ease with which corporations in India can patent plants, a process that indigenous communities struggle with financially.¹² This is a small part of a system of exploitation and injustice, where indigenous communities do not get their rightful recognition and benefits. Efforts to solve this issue must include the protection of indigenous communities. We must ensure they are involved in processes related to their culture. Also, there is a need for international cooperation to create legal frameworks that uphold the ideas of fairness and respect. This would lead to a fair and inclusive global society where the rights of all people are protected.

To combat biopiracy, action is required at both the national and international levels. Actions should include enforcement mechanisms that deter and

¹⁰WIPO. “Patents.” *Www.wipo.int*, WIPO,

www.wipo.int/patents/en/#:~:text=What%20is%20a%20patent%3F

¹¹ Tardi, Carla. “Trademark Definition, What It Protects, Symbols, Example.” *Investopedia*, 23 Mar.

2022, www.investopedia.com/terms/t/trademark.asp#:~:text=Key%20Takeaways

¹² Shah, Anup. “Food Patents—Stealing Indigenous Knowledge?” *Www.globalissues.org*, 20 July 1998, www.globalissues.org/article/191/food-patents-stealing-indigenous-knowledge

penalize IP theft. Additionally, promoting awareness, capacity-building, and technology transfer to indigenous communities is essential. All of this would create a culture of mutual benefit and respect. As well as this, it would build an environment where indigenous knowledge is valued, protected, and used for the well-being of humanity. For this to happen, we must prevent the biopiracy of indigenous knowledge for private gain.

Alternative Protection of Indigenous Knowledge

Although very limited in its use, there is technically an alternative to IP patents that can be used to legally protect indigenous knowledge or resources that only come from one area of the world. WIPO declares that a geographical indication (GI), "...is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. In order to function as a GI, a sign must identify a product as originating in a given place. In addition, the qualities, characteristics or reputation of the product should be essentially due to the place of origin. Since the qualities depend on the geographical place of production, there is a clear link between the product and its original place of production."¹³

Another alternative to IP patents could be the use of databases as they can be tools for protecting indigenous knowledge from biopiracy. Any solution requires an approach that respects the rights and autonomy of indigenous people while addressing the issues of exploitation and cultural appropriation. One way in which databases would be able to help is through documentation and preservation of indigenous knowledge. Since they provide a platform for recording indigenous knowledge in digital formats, it can be kept safe against environmental degradation, cultural assimilation, or exploitation. Another way in which databases would be able to help is through IP protection. They can serve as archives for intellectual property rights associated with indigenous knowledge. By using databases, indigenous communities can establish legal proof of ownership and strengthen their claims.

While databases can potentially end the biopiracy of indigenous knowledge, they have some drawbacks. To work effectively, they must be complemented with broader legal, policy and community-based approaches. One such negative of databases is the digital divide that limits its use for indigenous groups. Those in remote or marginalized areas lack access to the technology needed to use databases. Along with limited internet connectivity, computer literacy, and access to digital devices, participation and engagement in database initiatives is sure to be a struggle. Another negative of databases is the possible dependency on external groups. Indigenous communities may have to rely on expertise, funding, or support to build and keep databases, which can create vulnerabilities. This dependency may limit community ownership and sustainability of database initiatives.

¹³ WIPO. "Geographical Indications." *Www.wipo.int*, [www.wipo.int/geo_indications/en/#:~:text=A%20geographical%20indication%20\(GI\)%20is](http://www.wipo.int/geo_indications/en/#:~:text=A%20geographical%20indication%20(GI)%20is)

Case Studies

The Exploitation of Indigo Dye

Indigo is a natural dye derived from certain plant species, which has been regarded as invaluable for dyeing textiles throughout history due to its vibrant blue colour. Even in this day and age, it has cultural, economic and social significance in many regions across the world meaning it is an important resource worth protecting for a lot of indigenous people around the world.

British colonial powers exploited the indigo plant from India, forcing local farmers to cultivate indigo crops instead of food crops, leading to famine and severe economic hardships. This was often imposed through unfair and unethical means such as high taxation, legal manipulation and even violence, which, in turn, led to widespread resistance and revolts by Indian farmers. These revolts mark landmark events today as local communities still remember the fight against the biopiracy of their colonists and it continues to remain a symbol of resistance against large agricultural corporations in India - such as during the 2020-2021 Indian farmers' protests.

Indigo-related conflicts across India drew international attention and inspired legal reform in many countries. In 1860, the British Parliament passed the Indigo Commission Act, which aimed to regulate indigo production and protect the rights of Indian farmers. Since it was the first time that a colonial power had given legal rights to indigenous people related to their unique wisdom and practices, it can be still used today as a precedent for setting more legal frameworks to prevent biopiracy, both domestically and internationally.

Australian Kakadu Plum

In the late 2000s, the US firm Mary Kay attempted to patent the Kakadu plum (or gubinge), an almond-shaped Australian fruit with many nutrients and medicinal uses.¹⁴ Kakadu plums are antioxidants, boasting the world's highest source of vitamin C. They have anti-inflammatory and antimicrobial properties. Aboriginal people have long used the fruit and tree for food and medicine. However, this led to protests from indigenous groups who claimed that the patent would prevent them from using the fruit. Following concerns and opposition over the application, Mary Kay withdrew their patent application in 2011.¹⁵

This is biopiracy because if Mary Kay had succeeded, they would have had a monopoly in Australia, excluding indigenous producers from the market. This means that local producers would be forced to supply Mary Kay but would

¹⁴ Harrison, Kay. "Protecting Indigenous Bush Foods and Medicines against Biopiracy." *UNSW Newsroom*, 5 Aug. 2020, newsroom.unsw.edu.au/news/social-affairs/protecting-indigenous-bush-foods-and-medicines-against-biopiracy

¹⁵ Smith, Fiona. "Protecting the Kakadu in Kakadu Plums: Selling Bush Foods to the World." *The Guardian*, 25 May 2017, www.theguardian.com/sustainable-business/2017/may/26/protecting-the-kakadu-in-kakadu-plums-selling-bush-foods-to-the-world.

not be allowed to sell the fruit themselves. Defeating the patent made a big difference to the market. It meant that indigenous-led sellers could market Kakadu plum-based products. They have more control of their businesses and the market. This case highlights the importance of protecting indigenous knowledge and resources. It also underscores the need for fair sharing of benefits derived from such resources.¹⁶

The “Gene Rush” in Sri Lanka

Due to advances in biotechnology and specifically with the introduction of DNA research, Sri Lanka has been marked as a future target of biopiracy as researchers and corporations look to exploit over 1,500 identified species of medicinal herbs and plants using modern technologies. However, as many of these plants have been used in processes by locals for over 3,000 years, corporations should not have the right to claim the processes that use those plants as their intellectual property and make a profit off of them. It is crucial to consider the traditional knowledge of locals when working with endangered plant species as using them without such knowledge could result in the extinction of these plants. It is important to ensure that ethical practices are followed to preserve these species for future generations.

For this reason, Sri Lanka’s government has engaged in several different measures to protect its biodiversity and prevent biopiracy of indigenous knowledge. One action includes establishing legal frameworks. The National Biodiversity Strategic Action Plan has laid out the steps that the government and the people must take to protect their country’s natural environment and use its biological resources efficiently and fairly. Another measure involves research and monitoring to assess biodiversity, identify threats, and track instances of biopiracy. This includes biodiversity surveys, studies, and the establishment of protected areas for conservation. These actions contribute to Sri Lanka's efforts to prevent biopiracy and promote sustainable use of its resources and indigenous knowledge. However, challenges remain in ensuring enforcement, implementation, and benefit-sharing.

MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

United States of America

The US has a rocky history in its support for biodiversity and its protection of traditional knowledge. Originally not a signatory of the Rio Convention on Biological Diversity (CBD, 1992) President Clinton later reversed this decision on the 4th June 1993. The US Senate has still not ratified this convention, supporting privatised agreements between corporations (e.g. between Merck and INBio) instead of

¹⁶ Holcombe, Sarah, and Terri Janke. “Patenting the Kakadu Plum and the Marjarla Tree: Biodiscovery, Intellectual Property and Indigenous Knowledge.” *Ssrn.com*, 2012, papers.ssrn.com/sol3/papers.cfm?abstract_id=2239519

international treaties. A non-signatory of the Cartagena Protocol on Biosafety (2000), the Nagoya Protocol (2010) and COP15's Kunming-Montreal Global Biodiversity Framework (GBF, 2022), the United States has substituted these treaties with its commitments to secure 30% of its land to protect biodiversity up until 2030 and it also pays into the Global Environment Facility (GEF) to assist LEDCs.¹⁷

One case involving a large American corporation revolved around the Neem tree (*Azadirachta Indica*), a fast-growing evergreen that grows in the arid areas of India. In 1971, after studying local groups who used the tree's many extracts in medicine, toiletries, contraception, fuel and agriculture, American Robert Larson began researching the tree's many capabilities, focusing intently on an extract called *Margosan-O*. He gained a patent for the product from the US Environmental Protection Agency (EPA) in 1985 and sold it to W.R. Grace and Co. that very same year. The corporation used the patent for their antifungal spray, Neemex, that they began to sell from 1994 onwards. However, the India-based Research Foundation for Science, Technology and Ecology (RFSTE) challenged the US patent, claiming that Indian villagers had been accessing the tree's many components using seed oil extractions and pesticidal emulsions for use in insect repellents for over 2,000 years. The Congressional Research Service (CRS) reported to the US Congress that the patent was justifiable as W.R. Grace's process of synthesis was a genuine innovation. Ultimately, the RFSTE proved that it was a simple advance on archaic Indian techniques and the patent was overruled in 2000.¹⁸

France

One of the EU's main advocates for the protection of nature and biodiversity, France has supported numerous treaties such as the Rio Convention on Biological Diversity (CBD, 1992), the Cartagena Protocol on Biosafety (2000), the Nagoya Protocol (2010) and COP15's Kunming-Montreal Global Biodiversity Framework (GBF, 2022), while also incorporating these declarations of intent into national law. In this way, any party that commercialises natural resources or traditional knowledge to create an economic advantage must ensure that this advantage is shared with the indigenous population(s) involved. This is just one small part of France's Environmental Code, of which any corresponding provisions can be accompanied by criminal penalties.¹⁹

Moreover, France is one of the EU's leading investors in ethnobotanical research. With all of its overseas territories and diverse ecosystems, French researchers and companies engage in ethnobotanical research, which often leads to documentation of indigenous knowledge held by local communities. This documentation can serve as

¹⁷ de Ferrer, Marthe. "COP15: Cautious Success or Abject Failure? The Experts Weigh In." *Euronews*, Euronews, 20 Dec. 2022, www.euronews.com/green/2022/12/20/global-biodiversity-framework-almost-200-countries-have-signed-but-is-it-truly-historic

¹⁸ Kuebler, Martin. "Biopiracy: Making Rich Nations Pay for Indigenous Knowledge – DW – 12/13/2022." *Dw.com*, Deutsche Welle, 13 Dec. 2022, www.dw.com/en/what-is-biopiracy-and-how-could-it-threaten-deal-to-save-nature/a-62172855

¹⁹ Declercq, Francis. "France: The Fight against Biopiracy and the Nagoya Protocol." *MIP*, Managing IP, 1 May 2018, www.managingip.com/article/2a5c2ilprp1lryskm2y9s/france-the-fight-against-biopiracy-and-the-nagoya-protocol

evidence in preventing unauthorized commercialization of traditional knowledge, furthering France’s battle against biopiracy both domestically and internationally.

Ecuador

Ecuador has long protected the rights of its indigenous people, and it has recently become increasingly vocal about properly guarding the knowledge and practices of local groups. It is a party of the Rio Convention on Biological Diversity (CBD, 1992), the Cartagena Protocol on Biosafety (2000), the Nagoya Protocol (2010) and COP15’s Kunming-Montreal Global Biodiversity Framework (GBF, 2022) which shows its continued commitment to protecting natural resources and indigenous groups from exploitation. Ecuador has lobbied inside the UN on multiple occasions to better ensure that indigenous people’s traditional knowledge is preserved and valued globally. It believes that traditional knowledge occupies a pivotal place in the range of actions needed to mitigate climate change, giving an even bigger emphasis on harnessing the full potential of such knowledge properly and without any misuse or misappropriation.²⁰

One instance where Ecuador’s actions have prevented biopiracy concern Ayahuasca, a psychoactive brew created for medicinal use and religious ceremonies, made using the stems of the *Banisteriopsis caapi* vine and the leaves of the *Psychotria viridis* shrub, both local to the parts of the Amazon rainforest. The brew itself is estimated to have been concocted in the area since 2000 BC, and it has been passed through generations of locals, making it a valuable piece of indigenous knowledge for inhabitants of Ecuador. In 1986, after claims made by US citizen Loren Miller, the Plant Medicine Corporation was granted US patent PP 05751 on it. The Co-ordinating Body of Indigenous Organisations of the Amazon Basin (COICA) challenged the patent on the grounds of lack of novelty and distinctiveness, that it is found in an uncultivated state and as a sacred element of many indigenous cultures of the Amazon. In May 1997, the COICA’s fifth congress agreed to launch a public awareness campaign. They declared Miller an enemy of Amazonian indigenous peoples, prohibiting him from entering their territories and warning Miller that they could not guarantee his physical safety in the event of entering those territories. In November 1999, the patent was cancelled.²¹

Fondation Danielle Mitterrand – France Libertés

Created by Danielle Mitterrand on the 4th of March 1986, this NGO is registered charity that has consultative status with the UN Economic and Social Council. In recent years, it has focused on protecting indigenous rights to knowledge and practices so that they are not misused by corporations.²²

²⁰ United Nations. “Indigenous People’s Traditional Knowledge Must Be Preserved, Valued Globally, Speakers Stress as Permanent Forum Opens Annual Session | UN Press.” *Press.un.org*, United Nations, 22 Apr. 2019, <https://press.un.org/en/2019/hr5431.doc.htm>

²¹ Ragnar, Johan. *Biopiracy, the CBD and TRIPS - the Prevention of Biopiracy*. 2004.

²² Fondation Danielle Mitterrand. “Our Mission.” *Fondation Danielle Mitterrand*, Fondation Danielle Mitterrand, <https://fondationdaniellemitterrand.org/en/our-mission/>

In October 2015, the Fondation Danielle Mitterrand filed an appeal against a patent for a compound found in the *Quassia Amara* plant native to French Guiana. The patent had been filed by a research department of the French government, who wanted to experiment on the compound. The patent would have stopped indigenous groups of French Guiana being able to use the plant for their own purposes. The appeal protected the indigenous groups who inhabited French Guiana and had known about the healing properties of *Quassia Amara* since at least the 17th century. Originally, the patent was overturned, marking a success for indigenous groups. However, in 2018, the patent was reinstated, meaning that local communities are banned from using the plant in remedial practices. The Fondation Danielle Mitterrand is continuing to fight this decision through legal means.²³

UNESCO LINKS

Founded in 2002 as an intersectoral initiative program, the Local and Indigenous Knowledge Systems (LINKS) programme promotes regional knowledge from small, tribal communities around the globe to combat issues in climate science and policy processes. LINKS has acted as a mediator between local communities, governments and large companies for the sharing of knowledge and mutual capacity-building whilst ensuring that such groups can protect their knowledge and practices from other, exploitative corporations. Since its creation, it has been instrumental in informing and facilitating exchanges between the holders of indigenous knowledge with scientific and environmental policy processes, international norms and standards, and the emergence of transdisciplinary knowledge cooperation.²⁴

One specific example of a definite action taken by UNESCO LINKS concerns Australia's Fish River fire project. The project is the first savanna burning and Indigenous project approved under the Australian government's Carbon Farming Initiative. Fish River Station, situated along the Daly River in Australia's Northern Territory, was purchased in 2010 by the Indigenous Land Corporation in collaboration with The Nature Conservation Agency, the Australian Government's National Reserve System, and Pew Environment Group, with support from Greening Australia. Indigenous rangers work to abate greenhouse gas (GHG) emissions from savanna fires. By using methods that draw on Indigenous customary patterns and science, the area of land that had been historically burnt each year by wildfires has been reduced from 69 percent to 3 percent. The project will deliver about 13,000 Kyoto-compliant carbon credits a year for sale, helping overcome the barrier posed by the limited resources available to benefit the environment and strengthen Indigenous knowledge and practices.²⁵

²³ Bourdy, Geneviève, et al. "Quassia "Biopiracy" Case and the Nagoya Protocol: A Researcher's Perspective." *Journal of Ethnopharmacology*, vol. 206, no. 2, July 2017, pp. 290–297, www.sciencedirect.com/science/article/abs/pii/S0378874116323650, <https://doi.org/10.1016/j.jep.2017.05.030>

²⁴ United Nations. "Local and Indigenous Knowledge Systems (LINKS)." *Unesco.org*, United Nations, 2021, www.unesco.org/en/links

²⁵ UNESCO. "The Contribution of Local and Indigenous Knowledge Systems (LINKS) to IPBES: Building Synergies with Science." *Unesco.org*, 2013, unesdoc.unesco.org/ark:/48223/pf0000225242

TIMELINE OF EVENTS

DATE	DESCRIPTION OF EVENT
1492-1493	Christopher Columbus makes his first voyage across the Atlantic, marking the beginning of the European exploitation of resources at a mass scale against the indigenous populations.
March 1860	After a deadly, year-long revolt that began in the summer of 1859, the British Government passes the Indigo Commission Act, a world-first that gave indigo dye workers more rights and control to protect the indigo plant.
1993	The United States launches the International Cooperative Biodiversity Groups (ICBG) as a network of bioprospecting projects, aiming to ensure that any countries and their indigenous populations who hosted foreign researchers would receive equitable rewards and benefits.
1 January 1995	The World Trade Organisation (WTO) commences operations and adopts GATT into its framework, helping reduce restrictions on trade whilst increasing environmental protection, especially in the case of natural resources, around the globe.
1995	WTO agrees on the Trade-Related Aspects of Intellectual Property Rights (TRIPS) to define what can be recognised as Intellectual Property (IP), including measures to protect indigenous knowledge from external patents.
29 January 2000	The Cartagena Protocol on Biosafety is introduced as a supplement to the CBD, seeking to protect biodiversity from the potential risks posed by modern biotechnology and enabling LEDCs to ban research imports based on protecting natural resources and/or indigenous knowledge.
2002	UNESCO introduces the Local and Indigenous Knowledge Systems (LINKS) to promote and protect local and indigenous knowledge to better understand the skills and philosophies developed by societies with long histories of interaction with their natural surroundings.
29 October 2010	The Nagoya Protocol on Access and Benefit Sharing (ABS) is introduced as a supplement to the CBD to implement the fair and equitable sharing of benefits arising out of the commercialisation of natural and genetic resources, contributing to the conservation and sustainable use of biodiversity and indigenous practices.
March 2022	Geneva hosts an Earth Summit and lays out historic targets to protect wildlife and indigenous knowledge around the world,

	thereby raising awareness of the use of digital sequence information as a possible exploitative technique for natural resources.
December 2022	COP15 takes place in Montreal where the landmark Global Biodiversity Framework is agreed upon, benefitting indigenous people and local communities by protecting their natural resources and knowledge from classic forms of biopiracy as well as state-of-the-art digital sequence information.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

Convention on Biological Diversity (CBD)

In November of 1988, the United Nations Environment Programme (UNEP) convened to assess the need for an international convention on biological diversity in the face of growing danger towards indigenous people’s knowledge and practices about natural resources. After expert consultation with some of the top scientists across the globe, they concluded that Earth’s biological resources were under threat from human activity and that legal instruments were needed to combat the further decline of biodiversity, found through species and ecosystems alike. There was also a great need to share the costs and benefits of innovation achieved by local populations between MEDCs and LEDCs.

The culmination of these actions and decisions was the Rio Earth Summit in 1992, during which 168 countries signed the CBD to protect humanity’s economic and social development as well as safeguard indigenous people’s knowledge and practices. It marks an inspirational first step in the conservation of biodiversity, the sustainable use of its components and the fair sharing of benefits arising from the use of genetic resources.²⁶

International Cooperative Biodiversity Groups (ICBG)

Established by the US government in 1993, the ICBG aims to promote collaborative bioprospecting research that benefits the researchers as well as the host country. It contains public as well as private funds. Universities and institutions from across the US have access to its benefits, which allow them to conduct studies on indigenous knowledge and natural resources in foreign countries with relative ease. The research conducted through the ICBG helps the global scientific community but it also ensures that any commercialisation or profits that emerge from research related to indigenous groups is fairly and equitably shared with the host community/country as well as any third parties. In this sense, its aims to fairly share knowledge and/or resources prevent biopiracy as they provide an alternative route for exploitation through ethical and legal measures that neither harm local populations, nor the environment habitated and used by that population. The ICBG operates in South America, Africa and Asia.

²⁶ Convention on Biological Diversity. “History of the Convention.” *Cbd.int*, Convention on Biological Diversity, 2011, www.cbd.int/history/

The Nagoya Protocol

Created as a supplementary agreement to the CBD, the Nagoya Protocol was signed on the 29th of October 2010 in Nagoya, Japan. It built upon the CBD by establishing a transparent legal framework for the use and access to genetic bioresources as well as the fair and equitable sharing of benefits arising from the commercialisation and utilisation of natural resources and indigenous knowledge. In this way, it helps contribute to the conservation and sustainable use of biodiversity. Also, it assists providers and users of genetic resources by providing better conditions for access to genetic bioresources. Alongside this, any signatories are mandated to provide proof of benefit-sharing when research on indigenous knowledge associated with natural resources occurs in their country or is completed by researchers originating from their country.²⁷

Kunming-Montreal Global Biodiversity Framework (GBF)

Due to ever-increasing awareness of the biodiversity crisis, citizens and investors pressured politicians to address the interlinked crises of climate change and biodiversity loss, especially regarding indigenous populations. Also, there were concerns that the Nagoya Protocol contained flaws as although the agreement requires countries to share benefits derived from genetic resources equitably, some countries do not regulate access to their genetic resources. This creates a disadvantage to countries with stricter regulations and benefit-sharing policies. This led the UN to hold an Earth Summit in Geneva in March 2022. Negotiators stressed that indigenous peoples and local communities should be the primary beneficiaries of research and receive fair compensation for their knowledge due to their crucial role in conservation and sustainability, but they could not reach an agreement before the summit ended.²⁸

Later in the year, Montreal hosted the 15th Conference of Parties for the CBD (COP15), in which issues unresolved during the summit in Geneva were discussed. Under the general umbrella of biopiracy, countries agreed on additional legal frameworks about primary beneficiaries of research, digital sequence information (DSI), the protection of indigenous knowledge and the significant 30x30 deal. At the end of COP15, the GBF was signed by almost 200 countries, making it the most important deal protecting biodiversity since the CBD in 1992.²⁹

²⁷ Convention on Biological Diversity. "About the Nagoya Protocol." *Cbd.int*, Convention on Biological Diversity, 2011, www.cbd.int/abs/about/

²⁸ Greenfield, Patrick. "Biopiracy Row at UN Talks in Geneva Threatens Global Deal to Save Nature." *The Guardian*, The Guardian, 30 Mar. 2022, www.theguardian.com/environment/2022/mar/30/cop15-faces-copenhagen-moment-genetic-data-dispute-aoe

²⁹ Kuebler, Martin. "Biopiracy: Making Rich Nations Pay for Indigenous Knowledge – DW – 12/13/2022." *Dw.com*, Deutsche Welle, 13 Dec. 2022, www.dw.com/en/what-is-biopiracy-and-how-could-it-threaten-deal-to-save-nature/a-62172855

POSSIBLE SOLUTIONS

Expand The Patent Cooperation Treaty (PCT) To Include Indigenous Knowledge

The PCT assists applicants in seeking patent protection internationally for their inventions, helps patent offices with their patent-granting decisions and facilitates public access to a wealth of technical information relating to those inventions. By filling out one international patent application under the PCT, applicants can simultaneously seek protection for an invention in a large number of countries. However, it is flawed as it does not allow patents for knowledge or practices. If the parties of the PCT agreed to expand its abilities to include more intangible things such as knowledge and practices, indigenous groups could legally apply for patents and protect themselves from being exploited by large corporations.³⁰

Improve Access and Benefit Sharing (ABS) System to Aid Marginalised Indigenous Communities

The ABS system was first introduced in the Nagoya Protocol in 2010. It was an important step forward in building a concrete, legal framework for the battle against biopiracy, as it forced corporations who had used and/or accessed genetic bioresources to share their economic benefits with the indigenous communities related to the aforementioned natural resources. However, it contained a key flaw: although the agreement requires countries to share benefits derived from genetic resources equitably, some countries do not regulate access to their genetic resources. This creates a disadvantage to countries with stricter regulations and benefit-sharing policies. Also, it puts indigenous populations with high representation in an advantageous position as they are better politically connected, well-organised and technologically resourced while excluding marginalised indigenous populations who are less capacitated. To this end, especially with the increase in digital biopiracy through DSI, it would be advisable to review the ABS system and ensure that its goals of fair and equitable benefits to *all* indigenous communities are met.

Introduce an Economic Levy for Commercialised Products

During COP15, a group of African countries suggested the implementation of a new economic levy on all commercialised bio-sourced products based on a system already in use in South Africa. This system would entail a 1% tax on all products that had been produced or developed using indigenous knowledge and/or natural resources. The money from this tax would go directly to the indigenous community involved, ensuring that they earn a set amount from every sale made. This would also support the conservation of biodiversity. Although it was rejected and ultimately not included in the GBF signed at the end of COP15, it is still a revolutionary idea that could provide a direct, bureaucratic-free path to economic earnings for indigenous communities across the globe.

University Funds for Young Indigenous People

One of the key issues facing indigenous communities today is that they struggle to keep up with the technologically advanced world around them. This leaves them susceptible to external exploitation by corporations. If a fund was created to send

³⁰ WIPO. "PCT – the International Patent System." *Wipo.int*, WIPO, 2019, www.wipo.int/pct/en/

young people from indigenous communities to universities or other places or higher education, integration into modern society would be easier. The skills young indigenous people would gain through this fund could help these indigenous communities. For example, by choosing a science or engineering degree, they could develop their community's knowledge and practices within the local population, meaning that it could benefit the community without the need for external dependence. A law degree could help the indigenous community take on large corporations that have acted through biopiracy to gain resources or knowledge without providing proper compensation, meaning the community would be able to protect itself in this way.

BIBLIOGRAPHY

Silva, Daniella. "Biopiracy: The Largely Lawless Plundering of Earth's Genetic Wealth." *Landscape News*, 15 Dec. 2020, <https://news.globallandscapesforum.org/48905/biopiracy-the-largely-lawless-plundering-of-earths-genetic-wealth/>.

Rose, Janna. "Biopiracy: When Indigenous Knowledge Is Patented for Profit." *The Conversation*, The Conversation, 8 Mar. 2016, <https://theconversation.com/biopiracy-when-indigenous-knowledge-is-patented-for-profit-55589>

Bourdy, Geneviève, et al. "Quassia "Biopiracy" Case and the Nagoya Protocol: A Researcher's Perspective." *Journal of Ethnopharmacology*, vol. 206, no. 2, July 2017, pp. 290–297, www.sciencedirect.com/science/article/abs/pii/S0378874116323650, <https://doi.org/10.1016/j.jep.2017.05.030>.

Efferth, Thomas, et al. "Biopiracy versus One-World Medicine—from Colonial Relicts to Global Collaborative Concepts." *Phytomedicine*, vol. 53, Feb. 2019, pp. 319–331, www.sciencedirect.com/science/article/abs/pii/S0944711318301909, <https://doi.org/10.1016/j.phymed.2018.06.007>.

Wynberg, Rachel. "Biopiracy: Crying Wolf or a Lever for Equity and Conservation?" *Research Policy*, vol. 52, no. 2, Mar. 2023, p. 104674, www.sciencedirect.com/science/article/pii/S0048733322001950#ab0010, <https://doi.org/10.1016/j.respol.2022.104674>.

Science Direct. “Bioprospecting - an Overview | ScienceDirect Topics.” *Www.sciencedirect.com*, Science Direct, www.sciencedirect.com/topics/medicine-and-dentistry/bioprospecting.

Vuong, Paton, et al. “The Little Things That Matter: How Bioprospecting Microbial Biodiversity Can Build Towards the Realisation of United Nations Sustainable Development Goals.” *NPJ Biodiversity*, vol. 1, no. 1, 7 Dec. 2022, www.nature.com/articles/s44185-022-00006-y, <https://doi.org/10.1038/s44185-022-00006-y>.

Reid, Walter V. *Biodiversity Prospecting*. 1993. *Www.wri.org*, WRI, 5 Jan. 1993, www.wri.org/biodiversity-prospecting.

---. “Indigenous Knowledge - an Overview | ScienceDirect Topics.” *Www.sciencedirect.com*, Science Direct, www.sciencedirect.com/topics/earth-and-planetary-sciences/indigenous-knowledge#:~:text=Indigenous%20knowledge%20refers%20to%20understandings.

United Nations. “Indigenous People’s Traditional Knowledge Must Be Preserved, Valued Globally, Speakers Stress as Permanent Forum Opens Annual Session | UN Press.” *Press.un.org*, United Nations, 22 Apr. 2019, <https://press.un.org/en/2019/hr5431.doc.htm>

World Trade Organisation. “WTO | the History of Multilateral Trading System.” *Wto.org*, WTO, 2015, www.wto.org/english/thewto_e/history_e/history_e.htm.

WTO. “>WTO | Intellectual Property (TRIPS) - Gateway.” *Wto.org*, WTO, 2018, www.wto.org/english/tratop_e/trips_e/trips_e.htm.

---. “History of the Convention.” *Cbd.int*, Convention on Biological Diversity, 2011, www.cbd.int/history/.

CBD. “The Cartagena Protocol on Biosafety.” *The Biosafety Clearing-House (BCH)*, CBD, 26 May 2023,

https://bch.cbd.int/protocol?_gl=1*18h5hly*_ga*MTMwNzlyMjMxNi4xNjk0MDg1NjEx*_ga_7S1TPRE7F5*MTY5NDExNTI4NS4zLjEuMTY5NDExNjMxMi41Ni4wLjA.

Convention on Biological Diversity. “About the Nagoya Protocol.” *Cbd. int*, Convention on Biological Diversity, 2011, www.cbd.int/abs/about/.

UNESCO. “Local and Indigenous Knowledge Systems (LINKS).” *UNESCO*, UNESCO, 24 Feb. 2018, <https://en.unesco.org/links>

Greenfield, Patrick. “Biopiracy Row at UN Talks in Geneva Threatens Global Deal to Save Nature.” *The Guardian*, The Guardian, 30 Mar. 2022, www.theguardian.com/environment/2022/mar/30/cop15-faces-copenhagen-moment-genetic-data-dispute-aoe.

Bullens, Lara. “Biopiracy: The Fight for Fairness in the Scientific Exploitation of Natural Resources.” *France 24*, France 24, 9 Dec. 2022, www.france24.com/en/environment/20221209-biopiracy-the-fight-for-fairness-in-the-scientific-exploitation-of-natural-resources.

Kuebler, Martin. “Biopiracy: Making Rich Nations Pay for Indigenous Knowledge – DW – 12/13/2022.” *Dw.com*, Deutsche Welle, 13 Dec. 2022, www.dw.com/en/what-is-biopiracy-and-how-could-it-threaten-deal-to-save-nature/a-62172855.

Dekimpe, Valerie. “Countries at COP15 Reach Historic Agreement to Halt Loss of Biodiversity.” *France 24*, France 24, 19 Dec. 2022, www.france24.com/en/environment/20221219-countries-at-cop15-reach-historic-agreement-to-halt-loss-of-biodiversity.

de Ferrer, Marthe. “COP15: Cautious Success or Abject Failure? The Experts Weigh In.” *Euronews*, Euronews, 20 Dec. 2022, www.euronews.com/green/2022/12/20/global-biodiversity-framework-almost-200-countries-have-signed-but-is-it-truly-historic.

Declercq, Francis. “France: The Fight against Biopiracy and the Nagoya Protocol.” *MIP*, Managing IP, 1 May 2018,

www.managingip.com/article/2a5c2ilprp1lryskm2y9s/france-the-fight-against-biopiracy-and-the-nagoya-protocol.

Fondation Danielle Mitterrand. "Our Mission." *Fondation Danielle Mitterrand*, Fondation Danielle Mitterrand, <https://fondationdaniellemitterrand.org/en/our-mission/>.

WIPO. "PCT – the International Patent System." *Wipo.int*, WIPO, 2019, www.wipo.int/pct/en/.

Gibbens, Sarah. "Is Your Favourite "Green" Product as Eco-Friendly as It Claims to Be?" *Environment*, National Geographic, 22 Nov. 2022, www.nationalgeographic.com/environment/article/what-is-greenwashing-how-to-spot.