

ACCESS TO GENETIC RESOURCES AND BENEFIT SHARING

**Theory to Practice
under the
Nagoya Protocol**

United Nations Development Programme



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**Theory to Practice under
the Nagoya Protocol**





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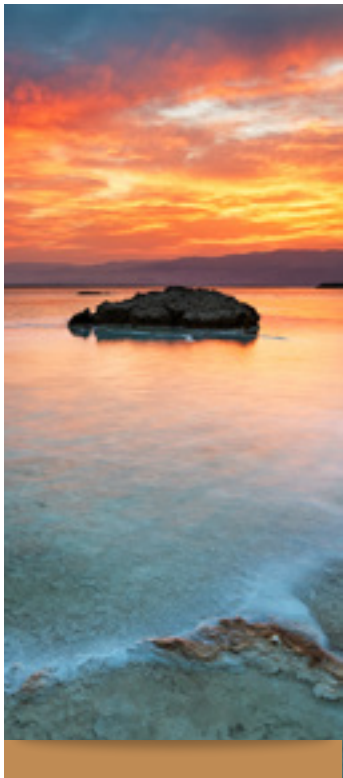
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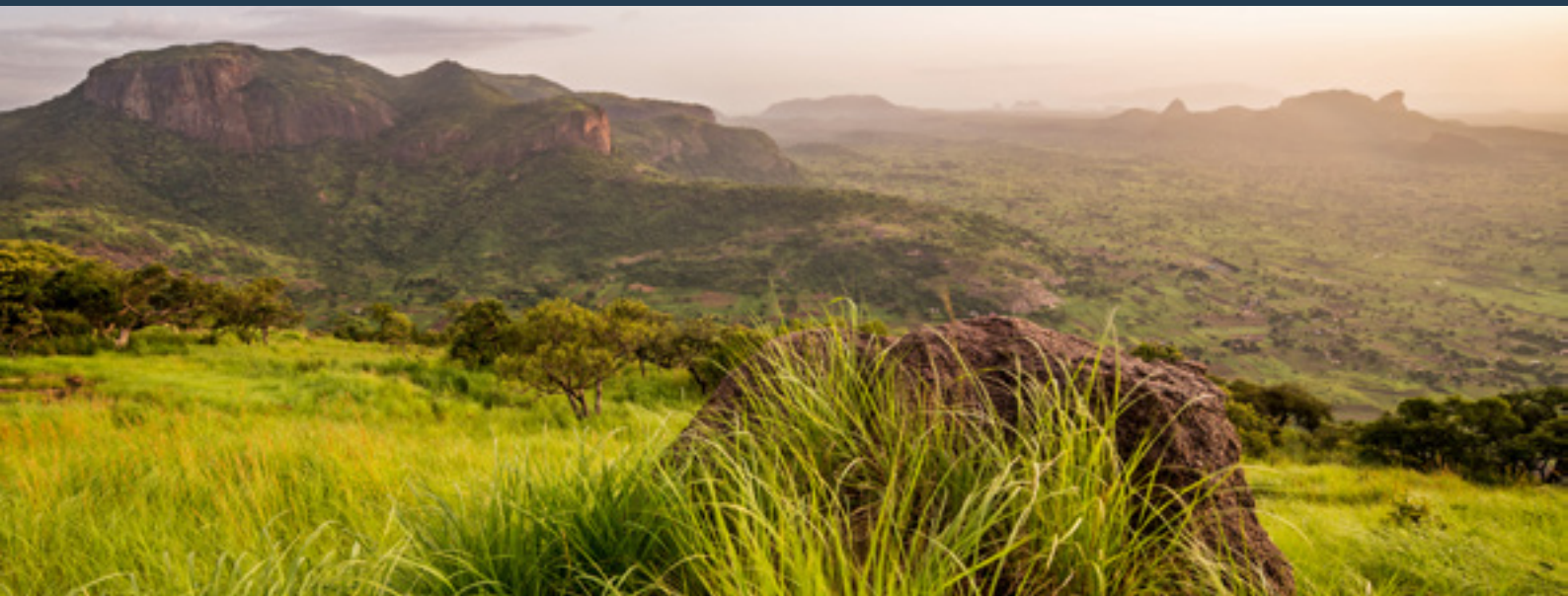
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The reports in this new publication underscore the importance of genetic resources to the 2030 Agenda for Sustainable Development, not only in terms of catalysers of processes for the conservation and sustainable use of biodiversity, but also as drivers for the recovery during post-pandemic times.



**SUSTAINABLE
DEVELOPMENT
GOALS**

Introduction

In 2020, the Nagoya Protocol on Access to Genetic Resources and Benefit-Sharing celebrated its tenth anniversary with the support of a Global ABS Conference organized by the Secretariat of the Convention on Biological Diversity and the UNDP-GEF Global ABS project. The COVID-19 pandemic was no obstacle to this online event held over a five-week period which brought together 95 panelists and 888 participants from 115 countries. Participants came out of the conference with the conviction that the Post-2020 Global Biodiversity Framework to be negotiated in China in 2021 must revamp implementation of the Nagoya Protocol and underscore the possibilities of genetic resources as drivers for sustainable development. Concrete examples of this vision were showcased in late 2018 with the publication of the book *ABS is Genetic Resources for Sustainable Development* launched at the 14th Conference of the Parties of the Convention on Biological Diversity. Back in 2018, during the book launching, high-level government officials from the countries showcased in the book reaffirmed their commitment to ABS principles and their implementation. For example, Carlos Manuel Rodríguez, then Minister of Environment and Energy of Costa Rica and current Chief Executive Officer of the GEF, described the discovery process of a potential organic crop-protection agent derived from the Costa-Rican endemic tree *Lonchocarpus costaricensis*, and explained the application of the country's law of biodiversity to regulate access to the tree's genetic resources and benefit-sharing implications.

Almost three years later, UNDP and the GEF are pleased to present a follow-up to this publication in which the outcomes of ABS implementation efforts undertaken by countries and supported by the UNDP-GEF Global ABS Project and national ABS projects are documented for 24 countries from six regions: Africa, the Arab States, Asia, Central & Eastern Europe, Latin America & the Caribbean and the Pacific Islands. The reports are authored by experts and practitioners from government, research institutions, indigenous peoples and local communities. Each country report is focused primarily on how that

country has impacted the status of its national legal framework for ABS and traditional knowledge along with the presentation of a biodiscovery case as an example of how traditional knowledge, science, technology and human ingenuity may have been used to develop novel products from genetic resources within that framework. Additional components may include assessments of how the reported work contributes to the country's progress toward addressing specific Sustainable Development Goals and statements from eyewitnesses and sustainable development advocates providing personal accounts of impacts of the biodiscovery cases, key challenges and efforts at overcoming them.

The reports in this new publication underscore the importance of genetic resources to the 2030 Agenda for Sustainable Development, not only in terms of catalysers of processes for the conservation and sustainable use of biodiversity, but also as drivers for the recovery during post-pandemic times. In Argentina, for example, the team of local scientists working on the development of molecules from the camelid guanaco against the group A rotavirus, which is the main viral agent responsible for paediatric diarrhoea, is using the technical capacity acquired through the project for the development of a product against COVID-19 from nanobodies obtained from the domestic llama. The innovations described in the book target not only the pharmaceutical sector but also the agriculture, crop-protection, food/beverage and cosmetic industries. Countries continue developing their domestic scientific and technological capacities which, together with traditional knowledge, are harnessing the potential of genetic resources.

These scientific innovations showcase one of the multiple dimensions of the ABS concept which also embodies legal, ecological, economic and social aspects that evolve constantly and require technical support. With this in mind, in late 2019, the Global ABS Project created a global community of practice on ABS. A chapter in this book is devoted to this online platform, which gathers over 680 members ranging from indigenous peoples and local communities, policy makers and scientific research and academic organizations. Although the activities implemented by the Global ABS Community respond to the needs of the countries covered by the Global ABS Project, current platform content on ABS and tools to strengthen capacities are made available globally and thus are accessible for all community members, creating a multiplier effect beyond the Global ABS Project countries.

Almost 30 years have passed since the ABS concept was brought to the international arena by the CBD. Although the Nagoya Protocol became international law and this facilitated the development and implementation of national enabling legal environments in most countries, more work is still needed to deliver the significant economic, social and environmental benefits envisioned by the negotiators of the CBD in 1992. The good news is that the international community is making good progress. Examples of uses of genetic resources such as those showcased in this publication are building trust between providers and users of these resources and all parties involved in these deals are beginning to see the benefits. Genetic resources are the treasure trove of humanity and we have the tools to realize their potential.



A stylized, handwritten signature in dark ink.

PRADEEP KURUKULASURIYA

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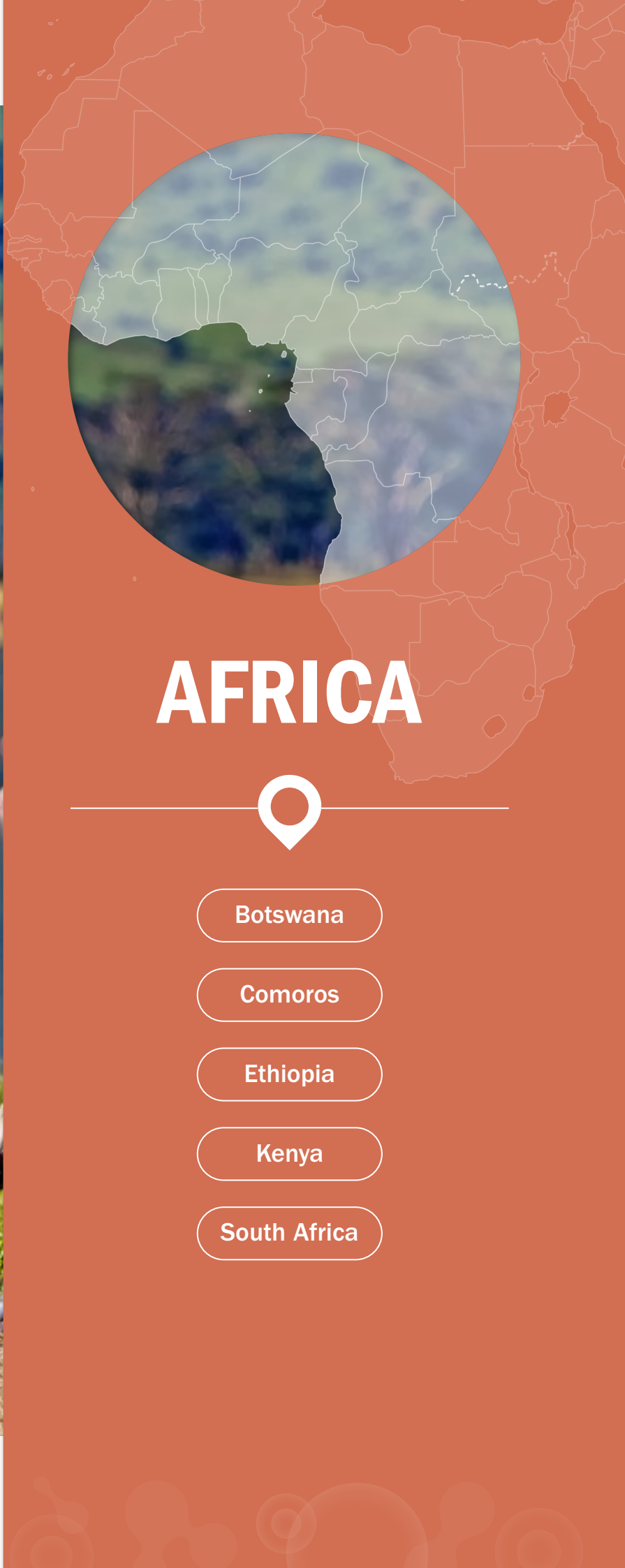


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AFRICA



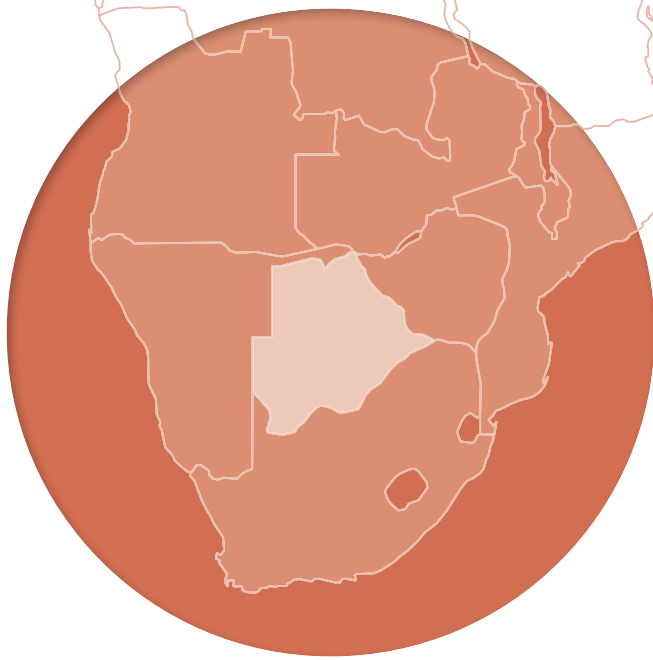
Botswana

Comoros

Ethiopia

Kenya

South Africa



REPUBLIC OF Botswana

Laying the foundation
for an ABS Regime

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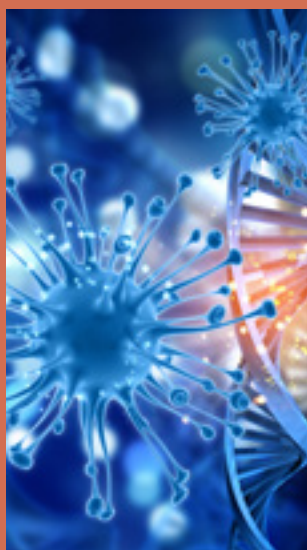




SETTING THE SCENE



Biodiversity
is one of the key
pillars for the country's
development vision ...



... genetic resources
lost due to exploitation
by external commercial
interests ...



hoodia



devil's
claw



wild
melons



Botswana is a vast country, dominated by arid and semi-arid landscapes which are very rich in biodiversity. Some of its ecosystems such as the Okavango delta and Makgadikgadi salt pan are globally renowned for species richness. The economy is thus significantly supported by the exploitation of its rich biodiversity for development sectors such as energy, tourism, livestock and arable agriculture. Many local communities, especially in rural areas, are dependent on biodiversity resources for their livelihoods. As a result of Vision 2036, with its third pillar on Sustainable Environment, *"By 2036, sustainable and optimal use of our natural resources will have transformed our economy and uplifted our people's livelihoods."* Biodiversity has long been a component of the country's development vision as highlighted in the 2016 Botswana National Biodiversity Strategy and Action Plan predicting that, by 2025, *"ecosystem, species and genetic diversity is valued, protected, and used sustainably and equitably, through the involvement of all sectors of society and the provision of sufficient resources for its sound management."*

Botswana with its rich biological resources has taken steps to assess and inventory those that can potentially be used under the Nagoya Protocol. This is important and necessary since the country may have lost genetic resources such as hoodia (*Hoodia gordonii*, Apocynaceae), the grapple plant or devil's claw (a species of genus *Harpagophytum*, Pedaliaceae) and wild melons to exploitation by external commercial interests. The assessment and inventorying of the country's biological resources are key to the conservation and sustainable use of genetic resources.

National frameworks on ABS and associated traditional knowledge

The country has articulated policies, strategies and plans that focus on the conservation and protection of biodiversity resources, including adopting and mainstreaming global multilateral environmental agreements and protocols in national legislative framework and policies. The country has been party to the CBD since 1995 and is among the leading countries in Africa in supporting the CBD principles of mainstreaming biodiversity in national plans for human well-being and poverty reduction. Botswana also ratified the Cartagena Protocol in 2001 and acceded to the Nagoya Protocol in 2013. It produced its first NBSAP in 2004, which has been reviewed periodically, the last review being in 2016.

The NBSAP provides a framework strategy that allows multiple sector issues to be addressed, including agriculture, water, wildlife management and land degradation/rehabilitation. The NBSAP is aligned to the CBD 2011–2020 Strategy and the Aichi Biodiversity Targets involving principles of sustainable development, integrated conservation and development, equity across generations and biodiversity as the foundation of life and livelihoods.

Legal and institutional context of Botswana with regards to ABS

The Ministry of Environment Natural Resources Conservation and Tourism (MENT), through the Department of Environmental Affairs (DEA), currently serves as the focal point for the CBD and the Nagoya Protocol on ABS. The Department of Wildlife and National Parks is primarily responsible for animal biodiversity and other resources found in wildlife management areas, national parks, private game reserves and other such designated conservation areas. The Department of Forestry and Range Resources is responsible for plant resources, including veldt products and medicinal plants on state and communal lands. The current institutional arrangement to manage and regulate access to varied biological resources falls short of the requirements of the Nagoya Protocol. The two major components missing in the country's legal architecture are PIC and MAT. The legal architecture is also bereft of a clear legal process to deal with matters of access requisition for the utilization of biological resources and associated traditional knowledge in the context of the Nagoya Protocol.

The incorporation of the Nagoya Protocol principles into national laws and regulations is done at the national level, but their implementations involve a number of role players, including consultants and project team members, and a series of workshops involving a varied range of stakeholders at the grassroots level. The consultancy report and the project team members highlighted the need for legal interventions to promote effective implementation of the obligations of the Nagoya Protocol in Botswana.

As part of the UNDP-GEF Global ABS Project on “*Strengthening Human Resources, Legal Frameworks and Institutional Capacities to Implement the Nagoya Protocol*”, Botswana has since created baselines for an ABS Regime implementation platform and created an enabling environment for productive interactions between users and holders of genetic resources and associated traditional knowledge. These two activities serve as a foundation for an ABS Regime.

The created baselines include assessment of the existing national legal frameworks and national gap analyses for the implementation of the Nagoya Protocol in Botswana; a communication strategy and action plan on ABS; an ABS manual; a code of conduct for researching traditional knowledge; a pilot registration and documentation strategy for traditional knowledge, that is, a database maintained by Companies and the Intellectual Property Authority and capacity development by various stakeholders for ABS contract drafting and negotiations.



The NBSAP provides a framework strategy that allows multiple sector issues to be addressed, including agriculture, water, wildlife management and land degradation/rehabilitation.



agriculture



water



wildlife management



degradation/rehabilitation



The Department of Wildlife and National Parks is primarily responsible for animal biodiversity and other resources found in wildlife management areas ...



national parks



private game reserves



designated conservation areas



The Department of Forestry and Range Resources is responsible for plant resources on state and communal lands, including:



veldt products



medicinal plants

The following components of the enabling environment for establishing working relations between users and holders of genetic resources and associated traditional knowledge have been developed and undertaken: The devil's claw and ostrich eggshell business cases within the valorization of genetic resources for the communities in the Ghanzi region; development and administration of a Knowledge Attitudes Practices (KAP) tool for ABS and relevant conferences and webinars.

The project also focused on ensuring participation of communities in the implementation of the Nagoya Protocol. Key was the development of the BCPs. The Shakawe and Lerala community groups have been capacitated on what constitutes a BCP. Relevant information for developing the BCPs was gathered through a Participatory Rural Appraisal (PRA) process. Consultative and capacity building sessions in Lerala and Shakawe to support the development of BCPs were carried out and the BCPs validated. Participants at the community level have been trained on PIC- and MAT-related issues by a party to the BCP development process.



Botswana continues to receive access applications for plant, animal and microbe genetic resources.



Dr Marks K. Dithlogo

National experience with ABS contracts

Botswana continues to receive access applications for plant, animal and microbe genetic resources. To respond to these applications, trainings were organized and undertaken for relevant stakeholders on ABS contract negotiations to equip them with necessary skills pertaining to drafting ABS contracts.

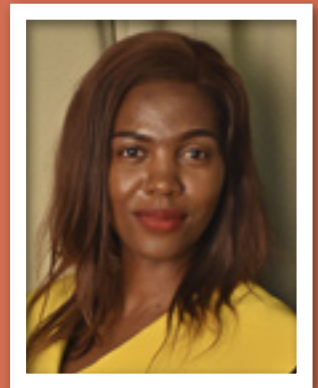
"Following the various interactions that we have had with ABS and utilizing lessons learned from previous training on contract negotiations, we have convened once again to upscale our knowledge. Previously we were focused on contract negotiations, specifically on issues that deal with PIC and MAT. On this occasion the focus will be on how to draft ABS contracts. As you can see, you come from different sectors, which deal with biological resources (biodiversity). The goal of these trainings is to equip a pool of experts with the requisite skills needed to actualize the ABS Law when it is finally developed. You are going to be called on to assist with the work of the Competent National Authorities and Checkpoints while also assessing the access applications and negotiating ABS agreements."

DR MARKS K. DITLHOGO, Chairperson of the National Biodiversity Committee, which oversees implementation of the CBD and the Nagoya Protocol, at a training on contract negotiations hosted by MENT and UNDP

With the understanding of the ABS elements and principles from the trainings, the ABS team assessed as an exercise one of the applications under ongoing evaluation for access to genetic resources wherein a user wanted to export a microbe for further sequencing. The access form that had been used was adapted from the African Practical Guidelines for implementation of the Nagoya Protocol.



EYEWITNESS STATEMENT



Ms Tshegofatso U. Lejowa



The Rural Development Council support and protect local knowledge systems.

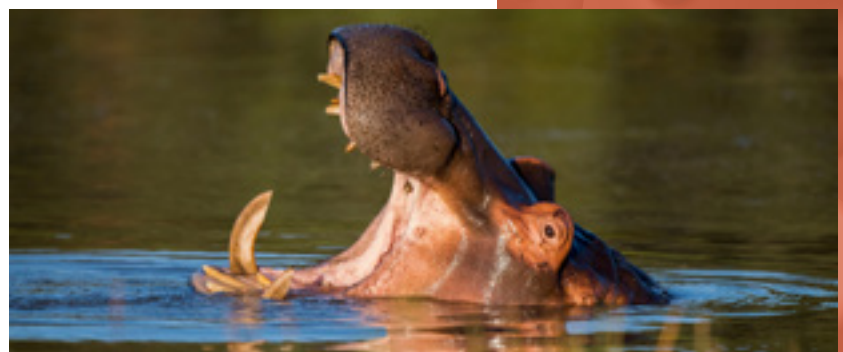
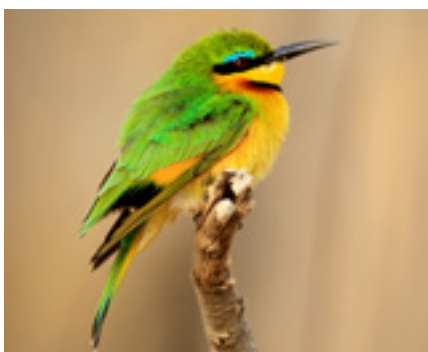


"Although ABS has gained momentum in Botswana, a lot of information remains undocumented. The opportunity to close legislative gaps is a step in the right direction to enrich research and development, innovation involving traditional knowledge as well as to regulate its access and use for both commercial and non-commercial research purposes. Traditional knowledge issues have remained unregulated without any policy to guide various sectors on the subject. There is renewed interest in traditional knowledge and information has been acquired from some communities through research and this has ultimately brought about some scientific solutions with commercial value but no benefits to holders of traditional knowledge.

"In some instances, protection of intellectual property rights has been acquired by the researchers without acknowledging the sources of the knowledge that informed the research, which then leads to the possibilities of the knowledge holders being excluded from using their knowledge because of intellectual property rights.

"Through a Cabinet directive, the Rural Development Council was given a mandate to support and protect local knowledge systems. The Ministry of Infrastructure, Science and Technology has a mandate of providing leadership in scientific and technological research in Botswana through the provision of an enabling policy and legislative environment. Notable progress has also been made to develop ABS law under the Ministry of Environment, Natural Resources Conservation and Tourism in partnership with the UNDP as part of the Global ABS Project."

MS TSHEGOFATSO U. LEJOWA, Principal Communal Resources Coordinator,
Department of Rural Development





The project facilitated us in developing our BCP as part of its outputs.



The workshop held for Dikgosi created a balance in ensuring that the traditional knowledge around morula was well captured.



... in the end, we should have populated data that will assist us in developing our own BCP.



Local communities' capacities, Biocultural Community Protocols and SDGs impacts

As part of the Global ABS Project, the ABS Team facilitated the Matute-a-Mongongo group and Kgetsi ya Tsie (KyT) communities in the development of their BCPs. The multi-stakeholder team simplified the ABS concept which was communicated using examples relevant to the communities. For example, the KyT Community Trust engaged stakeholders in an effort on the *"Fair and Equitable Sharing of Benefits Arising from the Utilization of Morula and its Associated Traditional Knowledge."*

"Our Trust benefitted from the Global ABS Project. This, we learned, is a project of the Ministry of Environment Natural Resources Conservation and Tourism implemented through the Department of Environmental Affairs in collaboration with UNDP. Through the interaction we learned that the project aims at assisting Botswana in strengthening the legal, policy and institutional capacity to develop national ABS frameworks; building trust between users and providers of genetic resources to facilitate the identification of biodiscovery efforts and strengthening the capacity of local communities to contribute to the implementation of the Nagoya Protocol. The project facilitated us in developing our BCP as part of its outputs.

"Several workshops were held with us in Lerala and were mainly aimed at raising awareness on the Nagoya Protocol; introducing the Global ABS Project; capacitating us and other stakeholders on the process of developing a BCP; gathering data to help in drafting the BCP and validation of our BCP.

"We were also assisted by other government departments, University of Botswana – Centre for Scientific Research Indigenous Knowledge and Innovation (CesrIKi), Companies and Intellectual Property Authority (CIPA) and local authorities – Dikgosi.

"Dikgosi were mostly men, both elderly and middle aged. Our Trust mainly consists of young, middle aged and elderly people. The workshop held for Dikgosi created a balance in ensuring that the traditional knowledge around morula was well captured. As traditional leaders, the participants in the workshop were supported in that they now have more knowledge on the Nagoya Protocol and operations of KyT.





"There were presentations that were meant to contextualize the purpose of the workshops in line with the objectives of the project, that in the end, we should have populated data that will assist us in developing our own BCP. We held conversations among ourselves through which we shared our own knowledge regarding both the social and spatial data on morula. The method that was used to facilitate the conversation was the PRA, with which we were facilitated to develop our BCP.

"We undertook a field visit with all our stakeholders to enable them to appreciate the environment that we interact with. Stakeholders were shown the areas from where we harvest or pick morula, and we explained in depth to them the processes and procedures involved in selecting and picking ideal morula fruits. The last session was validation of our protocol. We had to ensure that all necessary aspects were included in our BCP.

"We would like to thank the DEA, UNDP, CIPA and CesrIKi for facilitating the development of the BCP. We are also grateful to the Dikgosi of Tswapong villages for the support they gave us in this process."

MS MASEGO MMIPI, Coordinator, KyT Tswapong Hills Women's Resources Enterprise Community Trust in Tswapong, Central District Botswana

Impact of BCPs on SDGs

ABS as a theme by its nature straddles a number of SDGs, thus an ABS-orientated project creates good traction in the implementation of the SDGs at the national level. In this regard the KyT BCP thus contributes to SDGs 1, 5, 17, and specifically SDG 15.

Kgetsi Ya Tsie Tswapong Hills Women's Resources Enterprise Community Trust is based in Lerale, Central District of Botswana. It is a community-based organization that started operating in 1997. The Trust was established to empower women through sustainable use of the rich natural resource base and associated traditional knowledge that exist in the Tswapong area. The Trust brings together 882 women of diverse backgrounds and experiences from 26 villages, to work with the available natural resources in their area to improve livelihoods. Although the Trust membership consisted mainly of women, they have extended the membership to include men (SDG 5 and 17).



Ms Masego Mmipi



... we shared our own knowledge regarding both the social and spatial data on morula.



Stakeholders were shown the areas from where we harvest or pick morula, and we explained in depth to them the processes and procedures involved in selecting and picking ideal morula fruits.





SDG 1
No poverty



SDG 2
Zero hunger



SDG 5
Gender equality



SDG 9
Industry, innovation and infrastructure



SDG 15
Life on land



SDG 17
Partnerships for the goals



The wood of the morula tree has for a long time been used for carving chairs, stools and pestles and its fruit is a source of food.



Through observations and experimentation, KyT has improved and diversified knowledge on morula.



The morula tree (*Sclerocarya birrea*, Anacardiaceae) has therefore become central to their operations, and they have developed the BCP to assist in this regard. The BCP provides clear processes for sustainable use of the morula tree, its conservation and management, and how the women can sustainably utilize it. This BCP sets out how they have developed and preserved the morula tree and traditional knowledge associated with it. It also sets out conditions and processes for its management and conservation. Additionally, the BCP provides information on measures and systems in place for procuring raw materials from stakeholders and related interactions. This tool is also aligned to international and national legislative frameworks related to the access and benefit sharing of morula and associated traditional knowledge.

The protocol is a road map and tool with which women will interact and negotiate with stakeholders such as researchers, biotraders and bioprospectors (SDG 17). Researchers are the main stakeholders. Over the years, the Trust has interacted with undergraduates, graduates, scholars and academics from various institutions, both locally and internationally. The women will also use it to advocate and implement effective measures for the sustainability of morula trees in their locality.

Traditional knowledge associated with morula

The wood of the morula tree has for a long time been used for carving chairs, stools and pestles and its fruit is a source of food (SDG 1 and 2). Morula naturally became a central product in the operations of KyT. Through observations and experimentation, KyT has improved and diversified knowledge on morula. This has led to new products such as morula soap, oil and snacks being developed (SDG 9). As a community, the women have studied the habitat, uses and lifecycle of the morula tree and their own traditions and norms associated with their landscape for sustainable development of this resource.

PIC and MAT

The women will use the BCP to inform the processes of PIC and MAT. PIC for accessing associated traditional knowledge will be obtained from the Trust according to internal processes developed by the Trust from time to time. Following securing of PIC, the MAT will be negotiated and agreed upon between the user and the Trust. These terms will set out among others, where applicable, the involved associated traditional knowledge, scope of use, benefit sharing, confidentiality and non-disclosure, intellectual property rights and obligations of the parties as well as preferred mode of dispute resolution.

Addressing SDG 15, the Trust is established to empower women through sustainable use of the rich natural resource base and associated traditional knowledge that exist in the Tswapong area. The Trust brings together women of diverse backgrounds and experiences, to work with the available natural resources in their area to improve their livelihoods thus contributing to SDG 1 and 5.



MESSAGE FROM AN SDG ADVOCATE

"The 2020 International Day for Biodiversity theme: 'Our solutions are in nature,' reflected well our thinking on nature and its conservation as a country. This thinking has over decades guided the socioeconomic pursuits of our local communities, helping them to value the natural resources at their disposal as natural assets, core to either granting livelihoods or improving them. The morula tree is a case in point for the KyT Community Trust, vital to their operations. This Community Trust has developed wealth of experience and traditional knowledge around the use of the morula tree for products ranging from cosmetic oils for sale, to food, crafts, fuel and medicine. To ensure the sustainability of the natural solutions derived from this tree resource, the community developed the BCP, which is useful for planning a sustainable future for this resource. This example provides insight for other communities to strengthen nature's ability to provide sustainable solutions."

MS KEBABETWE KEOAGILE, ABS National Focal Point

The establishment of the legal framework will take time to come to the fore, and it is of utmost importance to catalyze the process of ensuring that there is full incorporation of the Nagoya Protocol principles into national laws and regulations, with tangible conservation and socio-economic results. Recognizing that the processes, time and resources required to generate concrete results, and to demonstrate the economic potential of following ABS principles, the Government of Botswana took the decision to develop a follow-up project through GEF Cycle 7 funding to further strengthen the national ABS framework, provide demonstration pilots, and enhance awareness raising, capacity, communication and partnership development for implementation of the Nagoya Protocol.



Ms Kebaabetswe
Keoagile



This Community Trust
has developed wealth
of experience and
traditional knowledge ...





UNION OF THE Comoros

Firm commitment to the
implementation of the
Nagoya Protocol

Author

Hayria Mohamed

*National Focal Point for the Nagoya Protocol
and National Coordinator,
UNDP-GEF Global ABS Project*

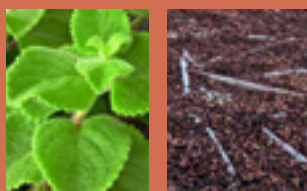




SETTING THE SCENE



... wealth of Comoros
biodiversity includes
many endemic species ...



... exports from Comoros
of cash crops, include
vanilla, ylang-ylang
and cloves ...



The Union of the Comoros is an archipelago nation located at the northern entrance to the Mozambique Channel, between Madagascar and the east coast of Africa. With a total area of 2,236 km² and a population of 758,316 inhabitants, the country includes four main islands, namely Grande Comore (Ngazidja), Anjouan (Ndzuani), Mohéli (Mwali) and Mayotte (Maoré). Since independence on 6 July 1975, the Comorian island of Mayotte is still under French occupation.

The country has an exceptional coastline, endemic species, a still-active volcano, Mount Karthala, and an exceptional natural heritage including the coelacanth, the Islets of Nyumasiwa, Lake Bunduni, and Mount N'tringui. The touristic potential of the Union of the Comoros is immense and all segments of the tourist industry can be found there: ecotourism, seaside tourism, cultural tourism, and agritourism. The rich and unique biodiversity of the Comoros archipelago provides the population with the essential elements for their existence and for the national economy through tourism and foreign exchange earnings. Conserving this segment of biodiversity constitutes a priority for global efforts for conservation of the world's biological diversity.

Comoros is classified among the 25 hotspots of world biodiversity recognized by Conservation International and one of the 35 critical regions identified by the World Wide Fund for Nature. The country has an avian endemism rate ranked as high priority by Birdlife International and is an integral part of the 43 priority marine regions of the planet, home to the second "Coral Triangle" of reef biodiversity known in the world.

Among this wealth of Comoros biodiversity, one finds ylang-ylang, vanilla, cloves, nutmeg, honey and beehive products, peasant borage, coelacanth, turtles, Livingstone's fruit bat, dugongs, humpback whales, as well as many endemic species. This natural capital is an important, indispensable socio-economic factor for the economic emancipation and social well-being of the population. For example, exports from Comoros of cash crops, such as vanilla, ylang-ylang and cloves, were estimated at US\$32 million in 2018, or more than 90% of the value of goods exported in 2018.

National framework on ABS and associated traditional knowledge

The Nagoya Protocol, adopted on 29 October 2010, is an integral part of the implementation of the CBD. The Union of the Comoros ratified the Protocol on 17 January 2013 and became a “Party by Accession” on 12 October 2014. As part of the national application of the Nagoya Protocol, the Comorian government is piloting a UNDP-GEF Global ABS Project on strengthening human resources, establishing a legal framework and enhancing institutional capacities. The Comorian government has thus taken the initiative of submitting, in December 2019, a bill to the Assembly of the Union, to facilitate the application of the Nagoya Protocol. During their very first sessions in the Chamber in May 2020, the new Comorian deputies unanimously adopted the text, immediately promulgated on 23 May 2020 by Presidential Decree No. 20-081/PR.

Article 5 of the law implementing the Nagoya Protocol provides that *“under the authority of the Ministry in charge of the Environment, the General Directorate of Environment and Forests (DGEF) is designated as the Competent National Authority (CNA) within the meaning of the provisions of article 13 of the Nagoya Protocol to exercise the prerogatives and functions of administrative authority conferred by or under the authority of this law, in particular the acceptance or rejection of formal requests for access to genetic resources and/or associated traditional knowledge”*.

Any request for a permit to access genetic resources and associated traditional knowledge must be submitted to the CNA, accompanied by the necessary information and documents such as:

- PIC
- an agreement specifying MAT between the supplier and the user of the genetic resources or associated traditional knowledge
- a request form for access to and use of genetic resources and associated traditional knowledge and export where appropriate.

The Comorian law on ABS establishes a National Commission for Genetic Resources and Associated Traditional Knowledge chaired by the CNA and composed of representatives of the ministerial departments concerned and representatives of regional directorates of the environment, the University of the Comoros, institutes, scientific

research centres, professional bodies and possibly other concerned public establishments and representative entities.

This collegial and advisory body has the mission to:

- evaluate requests for permits to access genetic resources and associated traditional knowledge
- ensure that the PIC and MAT arranged between the provider and the user of the genetic resources and traditional knowledge comply with the requirements of the Law and its application texts
- ensure that the sharing of benefits arising from the use of genetic resources and associated traditional knowledge is fair and equitable
- provide assistance on all matters related to access to and use of genetic resources and associated traditional knowledge
- maintain strict confidentiality of the information submitted to the CNA in accordance with the legislation in force when requesting access to genetic resources and traditional knowledge.

The Comoros thus becomes the fifth country to adopt ABS legislation within the framework of the Global ABS Project which has been implemented in 23 countries. This awareness is an incentive to protect these resources and their sustainable use, but also to ensure that any potential benefits that may result are shared in a fair and equitable manner.





Medicinal and aromatic plants, such as ylang-ylang, vanilla, cloves, nutmeg, moringa and peasant borage, are very important for subsistence, the national economy and foreign exchange earnings in Comoros.



Investigating the potential of local species for biodiscovery cases and ABS agreements

Through the Global ABS Project, a national inventory on genetic resources and traditional knowledge identified the first 101 highest priority biological species whose genetic resources are used for research and commercial purposes: 88 species of plants and 13 of animals. In parallel with this inventory, several meetings and exchanges took place with different actors from the international private sector and from public research institutions using genetic resources. This has made it possible to understand the various business models and the possible ways in which they access genetic resources and associated traditional knowledge, as well as how benefits arising from their use can be negotiated. Discussions are continuing to explore the content and modalities of these potential partnerships.

An economic exploitation of the research results on some of the Comorian genetic resources is therefore planned through at least four partnerships under negotiation. Within the scope of the Nagoya Protocol, the Comoros will also be able to protect and develop their endangered and iconic resources such as the coelacanth, sea turtles and Livingstone's fruit bat, all emblematic of the archipelago.

On the basis of discussions in progress with the various potential partners, ABS contracts can be established, with examples of sharing monetary and non-monetary benefits, initial fees or payments, capacity building, training, scientific cooperation, research partnerships, support for local development and information on tests and results, with the prospect of owning intellectual property rights.

Medicinal and aromatic plants, such as ylang-ylang, vanilla, cloves, nutmeg, moringa and peasant borage, are very important for subsistence, the national economy and foreign exchange earnings in Comoros. Ylang-ylang is the third product of Comoros exported and used by luxury perfume companies in France. Specifically, the product is the essential oil of ylang-ylang, obtained after six to twenty hours of distillation. Its olfactory traits differ from those of other oils, because there are not so many odorous molecules. In addition to its floral and jasmine notes, this essential oil has dry smoky and wooded facets.

The case of ylang ylang is a situation where access to the genetic resource does not comply with ABS procedures. The transfer is between several private suppliers and users, without the Government being involved in this commercial transaction. Today, the Government therefore considers it necessary to propose a negotiation approach to users in order to comply with the current ABS law.



EYEWITNESS STATEMENT



Dr Abdou Azali Hamza



... genetic resources and associated traditional knowledge effectively remain an essential factor in the development of the agrifood, pharmaceutical, cosmetic and energy sectors of the Comoros.



"Created in 1995, the National Research Institute for Agriculture, Fisheries and the Environment (INRAPE) of Comoros confirmed that according to scientific research already carried out at the national level, it is estimated that the country has an enormous potential in terms of genetic resources and traditional knowledge. These genetic resources and associated traditional knowledge effectively remain an essential factor in the development of the agrifood, pharmaceutical, cosmetic and energy sectors of the Comoros.

"The country holds this natural economic potential thanks to the invaluable richness of its biodiversity, which is characterized by the high levels of endemism: 33% of its flora, 44% of its terrestrial reptiles and 25% of its birds, which are now threatened by loss or fragmentation of their habitat. These threatened taxa include nearly 820 species of coastal and pelagic fish and large endemic marine mammals, including the coelacanth, the emblematic fish of the Comoros for more than 350 million years. However, the lack of experience in drawing up and negotiating ABS contracts represents a handicap preventing us from establishing win-win partnerships on the use of our genetic resources with national and foreign companies or laboratories.

"It is therefore hoped that the application of the ABS law will better regulate access to genetic resources and the fair and equitable sharing of the benefits arising from the use of Comorian genetic resources and associated traditional knowledge. In its Comoros Emerging Plan for 2030 (PCE), the Government undertakes to:

- *fully implement all biodiversity guidelines and conventions*
- *preserve and restore ecosystems and their services*
- *strengthen the contribution of forestry to maintaining and improving biodiversity*
- *establish a proactive national waste management policy."*

DR ABDOU AZALI HAMZA, Director General of INRAPE



... threatened taxa include the coelacanth ...

IPLCs' capacities, Biocultural Community Protocols and SDGs impacts

Through this Global ABS Project, all stakeholders were identified and capacity-building sessions on the Nagoya Protocol and the ABS mechanism were organized at the level of each island. In all, more than 300 people were involved, ranging from executives at the level of ministerial departments, to heads of NGOs involved in the protection of biodiversity, researchers from the University, lawyers, healers and doctors, among others. Awareness-raising tools are being produced in order to strengthen the capacities of all stakeholders, including the local population, holder of genetic resources and traditional knowledge.

For the enhancement of traditional knowledge, it was essential to produce a guide that reflects the realities at the country level because the medicinal practices of traditional healers and local communities are constantly subject to biopiracy. The ABS law will play an important role in facilitating access to medicinal genetic resources and traditional knowledge ensuring that the capture of the benefits arising from their exploitation will be granted to the traditional knowledge holders.

The protection of the environment and threats of climate change constitute an emerging issue for the Comoros. The Government's commitment to the Nagoya Protocol contributes significantly to the achievement of the national SDG targets by setting up this legal framework and by initiating these ABS-compliant biodiscovery partnerships.

The conservation, protection and enhancement of biodiversity remain mainly the responsibility of the central State and sometimes of the populations concerned, for whom protected areas are the favoured tools for protecting wildlife. Local officials are increasingly involved in the management of natural resources and have a better understanding their role in this context. Besides, local stakeholders are considered as the major actors for sustainable development, not only because they are the most able to know all the specificities at the community level, but also because they are the favoured partners in the establishment of policies and strategies adapted to each situation in the implementation of the agenda of the Comoros Emerging Plan of 2030. The PCE proposes to define a national policy to ensure that all the envisaged sectoral policies are

articulated with the objective of making adaptation to climate change and the sustainable management of natural resources be intrinsic conditions for the implementation of any public action.

These actions on the Nagoya Protocol align with the determining factors identified in the prioritization of the SDGs in the Comoros as accelerators of the achievement of sustainable and inclusive growth which do not compromise natural resources. Those are:

- promotion of green and blue economies as a means of promoting economic and social development practices that conserve biodiversity and build resilience to natural and climatic shocks
- integration of biodiversity protection and sustainable land management, impacts of climate change and risk management in different sectors and at different planning levels
- occupation of space and spatial planning integrating climate risks and natural disasters
- exploitation of environmental potential through the development of a green and blue economy and efficient management of resources.

Accommodation of these factors for accelerating environmental and ecological transformation in the country's development strategies and their articulation with the sustainable development objectives most relevant to them, in particular SDGs 6, 9, 12, 13, 14, 15 and 16, will also enable inclusive growth (SDG 8), reduce inequalities (SDG 10), eliminate hunger (SDG 2), promote access to energy (SDG 7) and develop sustainable cities (SDG 11).





MESSAGES FROM SDG ADVOCATES

"Due to its geographical position, the Comoros benefits from a natural environment that abounds in a rich and varied ecological and economic potential of natural capital whether terrestrial, coastal or marine. The country is internationally recognized for its wealth of biodiversity of vital importance, which can be used for the development of the food, pharmaceutical, cosmetic and ecotourism industries. To date, it has 20 key biodiversity areas, 251 endemic species and more than 500 flagship species.

"These actions around the Nagoya Protocol have thus made it possible to reveal many hopes for access and benefit-sharing arising from the use of genetic resources and traditional knowledge as well as their protection vis-à-vis biopiracy. In this context, Comorian biodiversity can then constitute a source of innovation for the national economy, through partnerships for research and development activities applied to genetic resources and even conservation.

"The Directorate General for the Environment quickly begins the process so that the country can therefore sign its first contracts with potential users of our genetic resources and associated traditional knowledge for the benefit of both parties."

HAYRIA MOHAMED, National Coordinator, Global ABS Project

"The environment and natural resources obviously constitute the backbone of the Comorian economy, because economic growth still depends heavily on the development of the agricultural sector, energy, and tourism and the livelihoods of the majority of the population depend on natural resources.

"The Global ABS Project fits perfectly with the guidelines of the PCE which proposes a set of measures and programmes for achieving the SDGs, of which the three main ones in the sector are:

- *Intensify the fight against the degradation of the environment and natural resources while respecting the related conventions.*
- *Encourage the development of natural resources.*
- *Preserve biosphere reserves (parks, nature reserves).*

"The role of UNDP is to support the vision of the PCE which takes urgent and sustainable measures to enhance, conserve, restore, improve coverage, representativeness of biodiversity and ensure sustainable management of protected areas at a national scale."

ANLIYAT MZÉ AHMED ABDALLAH, Programme Associate with the UNDP Country Office



Hayria Mohamed

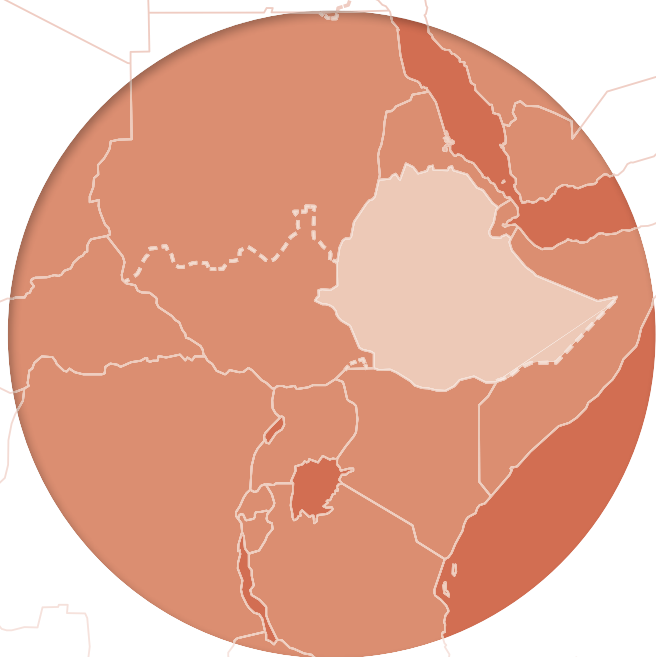


... the Comoros is internationally recognized for its wealth of biodiversity of vital importance ...



... actions around the Nagoya Protocol have made it possible to reveal many hopes for access and benefit-sharing arising from the use of genetic resources and traditional knowledge ...





FEDERAL DEMOCRATIC REPUBLIC OF **Ethiopia**

Developing trust between
users and providers of
genetic resources for ABS systems
in the agriculture and
cosmetic sectors

Author

Wubua Mekonnen
*Programme Manager,
UNDP Ethiopia Country Office*







SETTING THE SCENE



Ethiopia is inhabited by a great diversity of animal, plant and microbial genetic resources ...



The country possesses an estimated 6,000 species ...



75

cattle



6

honey bee



284

wild mammals



861

birds



201

reptiles



200

fish



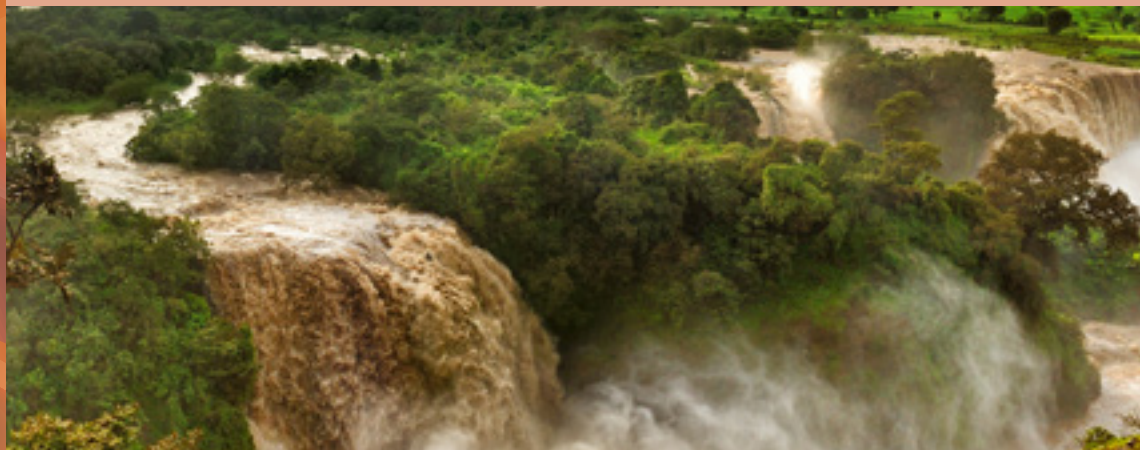
63

amphibians



1,225

arthropods



Ethiopia is located in the Horn of Africa bordered with Eritrea to the north, Djibouti and Somalia to the east, Kenya to the south and Sudan to the west. The country has great geographic diversity with altitudinal variation ranging from 116 m below sea level in the Danakil Depression to the highest peak of 4,620 masl at Mount Ras Dashen. As a result, Ethiopia is endowed with ten ecosystems, 18 major and 49 minor agro-ecological zones that are inhabited by a great diversity of animal, plant and microbial genetic resources that make the country one of the biodiversity hotspots of the world. The country possesses an estimated 6,000 species of higher plants of which 10% are endemic. There are 75 breeds of cattle, sheep, goat and equines, six species of honey bees, 284 species of wild mammals, 861 species of birds, 201 species of reptiles, 200 species of fish, 63 species of amphibians and 1,225 species of arthropods. Of the wild faunal resources; 29 mammal, 18 bird, 10 reptile, 40 fish, 25 amphibian and seven arthropod species are endemic to the country. The country also harbours a wide diversity of microbial genetic resources.

National framework on ABS and associated traditional knowledge

For Ethiopia, the Nagoya Protocol is a major turning point for proper implementation of ABS negotiations and follow-up. Most of the articles are more or less included in the existing ABS laws of Ethiopia and it is strongly believed that the Nagoya Protocol will boost their implementation especially when negotiations and agreements are made between Ethiopia and foreign companies. Relevant and new articles inspired by the Nagoya Protocol have been included during the revision of ABS laws of Ethiopia. This complements the existing ABS laws with the international regime and facilitates negotiations and agreements as well as the fair and equitable benefit sharing significantly. The established comprehensive national legal, policy, regulatory and institutional framework and capacity for ABS activated the potential for the diverse genetic resources and associated traditional knowledge for generating economic benefits to the country and key stakeholders, including local communities where appropriate, in the form of business, employment, technology transfer and capacity development. It also builds trust between users and providers of genetic resources which has strengthened biodiscovery efforts for biochemical products such as pharmaceuticals, nutraceuticals and agro-chemicals. This new opportunity has been strengthening the economic case and political motivation as well as the financing required for the conservation and sustainable use of biological diversity and genetic resources.

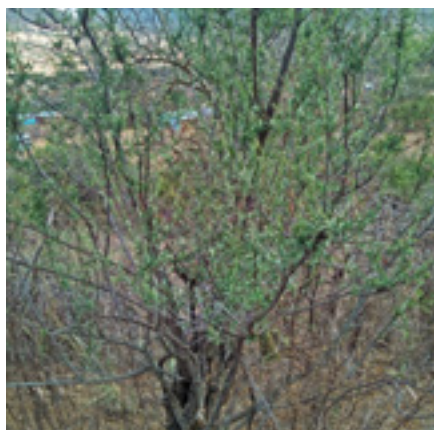


BIODISCOVERY CASES

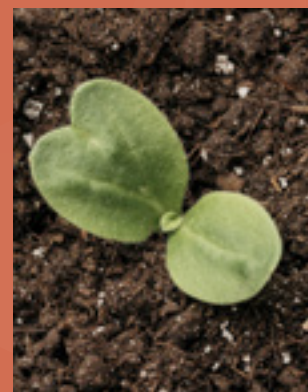
Negotiating ABS agreements and learning about business models of industries that use genetic resources and associated traditional knowledge

A local Ethiopian company (Menagesha Bio-tech Industry PLC) has accessed microbial genetic resources of the soil bacteria genus *Rhizobium* to produce inoculants for crops to serve as a biofertilizer. It provides organic fertilizer with improved performance at a lower cost to farmers. The value chain from this biotech company has contributed to the productivity of the agricultural sector, creating job opportunity and an alternative to imported fertilizers. During 2018, the company has paid more than US\$1,000 as royalties from its net profit. The company, due to its value chain, at its initial phase, has created job opportunities for 857 persons from the local community. Furthermore, the local communities organized as cooperatives have received \$265,625 from the sale of these genetic resources.

An ABS agreement on essential oils extracted from species of the plant genus *Osyris* is another success story in Ethiopia. The agreement was signed between the Ethiopian Biodiversity Institute (EBI) as provider and Docomo Oils PLC as user. The company has established an industry in Ethiopia for processing herbal compounds, extraction of essential oil formulation and the manufacture of other related herbal and cosmetics products for a duration of 10 years. The EBI has agreed that the user may harvest, collect and process essential oils from plants of *Osyris* species from the area stated in the agreement. The user, Docomo Oils PLC, is permitted to use these materials only for the purpose of developing essential oil products and has agreed not to over-exploit the genetic resources, but to utilize them in a sustainable manner. The company has acknowledged and declared Ethiopia as the geographic origin of these genetic resources for the manufacture of the final products. The company has agreed to pay \$50,000 as an advance payment upon signing the agreement. Collection of the plant materials began in September, 2016 as a preparatory phase, formal production at full capacity was in place in 2019.



... microbial genetic resources of the soil bacteria genus *Rhizobium* to produce inoculants for crops to serve as a biofertilizer ...



An ABS agreement on essential oils extracted from species of the plant genus *Osyris* is another success story in Ethiopia.



The company has acknowledged and declared Ethiopia as the geographic origin of these genetic resources for the manufacture of the final products.





EYEWITNESS STATEMENT



Mr Muko Bali



Plant of a species of
Osyris in fruit



As a result of the value chain of the ABS agreement at an initial phase created a job opportunity for 857 unemployed youth of the local community.



With the above-mentioned ABS agreement involving *Osyris*, EBI and Docomo Oils PLC, the company is establishing an industry in Ethiopia for processing herbal compounds, extraction of essential oil formulation and the manufacture of other related herbal and cosmetics products. As a result of the value chain of the ABS agreement at an initial phase created a job opportunity for 857 unemployed youth of the local community. Youths organized into 38 cooperatives to supply the genetic material to the company. The cooperatives sell a kilogramme of the plant material for 9 Ethiopian Birr (ETB), and earned a total of 8.5 million ETB to date. The cooperatives now plan to invest the 8.5 million ETB for fattening of livestock and engaging in other sectors of the economy. The company provides training for the cooperatives on sustainable harvesting methods of the *Osyris* plant materials.

The Hamer *woreda* (district) is one of the districts benefiting from this agreement. *"We established 14 cooperatives with a total membership of 221 youths and saved 28,000 ETB. We clearly have benefited from the genetic resources of Osyris."*

MR MUKO BALI, Representative from the Hamer woreda



IPLCs' capacities, Biocultural Community Protocols and SDGs impacts

In Ethiopia, the Nagoya Protocol is a key milestone for the ABS negotiations and its implementation and should enhance the country's negotiations and agreements that will be made between Ethiopia and foreign companies. The revised articles in the existing ABS laws will also improve the fair and equitable benefit sharing capacity of the local community.

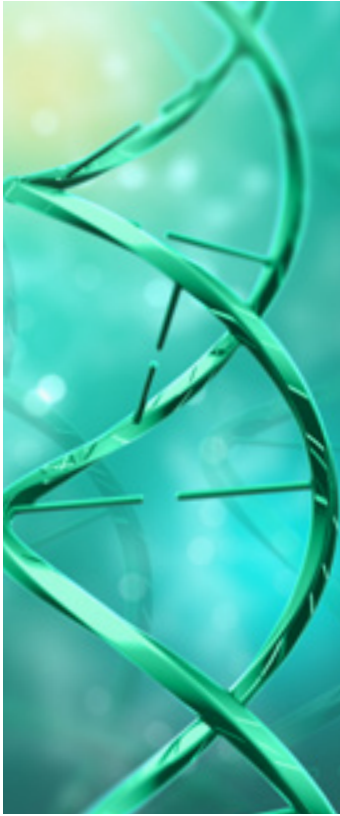
Ethiopia is also rich in biodiversity being recognized as one of the 20 mega-diverse countries and one of the 12 centres of origin and diversity (Vavilov centres). Although there is a national ABS law in place, the country is not adequately benefiting from its rich genetic resources and associated traditional knowledge. This is mainly due to: (i) limited initiatives in bioprospecting and valuation research and development, (ii) absence of adequate information on the value of genetic resources, (iii) lack of strong cooperation and links between the Ethiopian Biodiversity Institute (EBI), which is the ABS focal point, and the various sectoral institutes who are involved in different aspects of genetic resources and (iv) shortage of trained human resources for negotiating ABS agreements. To alleviate these bottlenecks the Government has started to strengthen the institutional framework and EBI capacity. The established comprehensive national legal, policy, regulatory and institutional framework and capacity for ABS activated the potential of the diverse genetic resources and traditional knowledge for generating economic benefits to the country and key stakeholders, including local communities where appropriate, in the form of business, employment, technology transfer, and capacity development. It also builds trust between users and providers of genetic resources in which identified and strengthened biodiscovery efforts of biochemical products such as pharmaceuticals, nutraceuticals, and agrochemicals.

Currently, EBI has reviewed and identified 38 species as potentials for bioprospecting and published them on its website. Though there is a need for further research and capacity development on the economic valuation of genetic resources in order to determine the true value of the resource. This in turn will help to preclude overutilization of genetic resources, ensure equitable sharing of benefits for the local communities, and contribute to the country's economic development.

The importance of ABS systems is not only embodied in the Nagoya Protocol but also in SDG 15, as reflected in Target 15.6: "Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources." The ABS system addresses poverty alleviation, equity, social justice and sound environmental management to ensure economically, ecologically and socially sustainable development.

Biodiversity conservation and healthy ecosystems are essential pillars of sustainable development and are widely reflected in the many other SDGs and their targets for which "Access to genetic resources and the fair and equitable sharing of benefits arising from their use" is relevant and integrated encouraging reinvestment of benefits into conservation and sustainable management of biodiversity and ecosystems.

During the implementation of the UNDP-GEF Global ABS Project, a BCP was developed that involved local communities on the Zege Peninsula in the Lake Tana Biosphere Reserve. There were several lessons learned which can be replicated or scaled up within the country and elsewhere in the world.



SDG 15
Life on land

TARGET 15.6



**PROMOTE ACCESS TO
GENETIC RESOURCES
AND FAIR SHARING OF
THE BENEFITS**

Conservation and sustainable utilization of biodiversity resources will be the means for Ethiopia to achieve most of its SDGs.



These include:

- Involvement of owners of genetic resources (local communities) and concerned stakeholders contributed to developing trust between users and providers of genetic resources.
- The process of developing the Zege BCP involved reflection about the interconnectedness of various aspects of IPLCs between culture and customary laws on natural resources management.
- Researchers increased their knowledge and informed their attitudes and practice to take into account national ABS law, the CBD, and the Nagoya Protocol related to ABS and traditional knowledge.

The Global ABS Project in Ethiopia was in operation for three years and in that time has improved the capacities of National Competent Authorities and related agencies on processing access applications, developing model contractual clauses under mutually agreed terms, including the negotiation and tracking of ABS agreements and biodiscovery projects and ensure compliance. The project also institutionalized mechanisms and established a CHM that already has a national ABS framework and advertises ABS information. A national ABS framework has been developed through the project, an ABS CHM established or ABS procedures and information uploaded into the existing national biodiversity CHM.

Looking forward for ABS

Ethiopia is a party to the Nagoya Protocol and has enacted a law that regulates access to genetic resources (*Access to Genetic Resources and Traditional Knowledge, and Community Rights Proclamation No 482/2006*) prior to the Nagoya Protocol. Proclamation No 482/2006 was extended to cover access to genetic resources found both in *ex situ* and *in situ* conditions and the traditional knowledge associated with them. It subjects the access to genetic resources and community knowledge to the requirement of a permit from the EBI and sharing of benefits. Though not fully utilized, the country's biodiversity resources are a means to achieve multiple SDGs.

The importance of an ABS mechanism is not only embodied in the CBD and the Nagoya Protocol, but is also imperative for achieving SDGs, specifically SDG 15, Target 15.6, "Ensure fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources." In addition to Target 15.6, genetic resources will directly and indirectly contribute to multiple other SDGs. Conservation and sustainable utilization of biodiversity resources therefore will be the means for Ethiopia to achieve most of its SDGs.

Key challenges remain. Initiatives in bioprospecting and valuation research and development are still limited. Information on the value of genetic resources is not available at the national level.

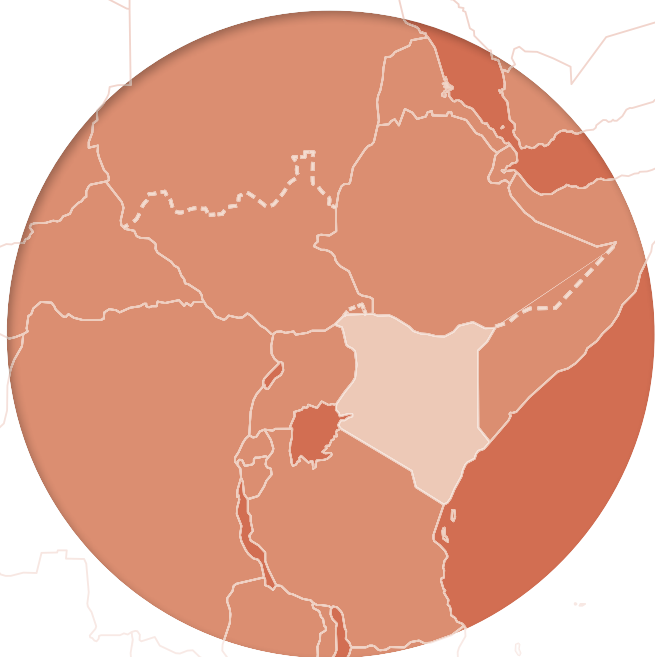
This is one of the gaps in the exercise of ABS provisions. The value of genetic resources is usually estimated rather than being based on scientific data sources. The country needs to conduct research on the value of its biological resources. Another problem in implementing ABS provisions is lack of strong cooperation and links between the ABS focal point (EBI) and the various organizations having responsibilities for different aspects of genetic resources. Therefore, there is a need for stronger coordination to implement ABS smoothly and effectively. There is also a critical gap in a trained work force especially in negotiating agreements that have an international nature and involve research on the value of biological resources.

Compliance with contractual agreements that are signed between the provider of the genetic resources and the user country is a vital issue. Non-compliance on the part of the user country destroys confidence of the providers and good working conditions. With user country non-compliance, the credibility of a policy on access to genetic resources and the associated traditional knowledge and benefit sharing from their use is eroded, discouraging the community that is the custodian of the genetic resources instead of being providing an incentive for conservation and sustainable use of those genetic resources.

If Ethiopia does not know the potential economic value of its genetic resources and is not able to determine that value, it will not be possible to realize fair and equitable benefit sharing by legal and institutional frameworks alone. The country needs to promote research on bioprospecting and valuation of genetic resources. It needs to build partnerships among key stakeholders (bioprospecting companies and research and academic institutions).

Realizing the role of ABS to achieve SDGs and contribute to economic development of the country will maximize economic benefits arising from utilization of genetic resources and ensure fair and equitable benefit sharing. Working with the concerned stakeholders, the users of genetic resources and the local communities can achieve the intended project goals by creating a good opportunity for developing trust between the users and providers of genetic resources. The process of developing the Zege BCP involved reflection about the interconnectedness of various aspects of the ways of life of IPLCs (such as among culture, customary laws, natural resources management and traditional knowledge) and involved resource mapping, evaluating governance systems and reviewing community development plans.

In conclusion, if conserved and effectively utilized, biodiversity resources will contribute to the country's ambitious goal to be a middle-income country by 2025 and achieve most of its SDGs. In this endeavour, the country needs commitment to attract private-sector companies that use genetic resources and local and foreign investors dedicated to committing their resources to develop and promote these untapped resources. This in turn will create job opportunities for the local and marginalized communities including women and a source of foreign exchange for the country.



REPUBLIC OF Kenya

Lessons and practical experiences
on implementation of the
Nagoya Protocol within the context
of the national ABS framework

Authors

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Kenya Wildlife Service

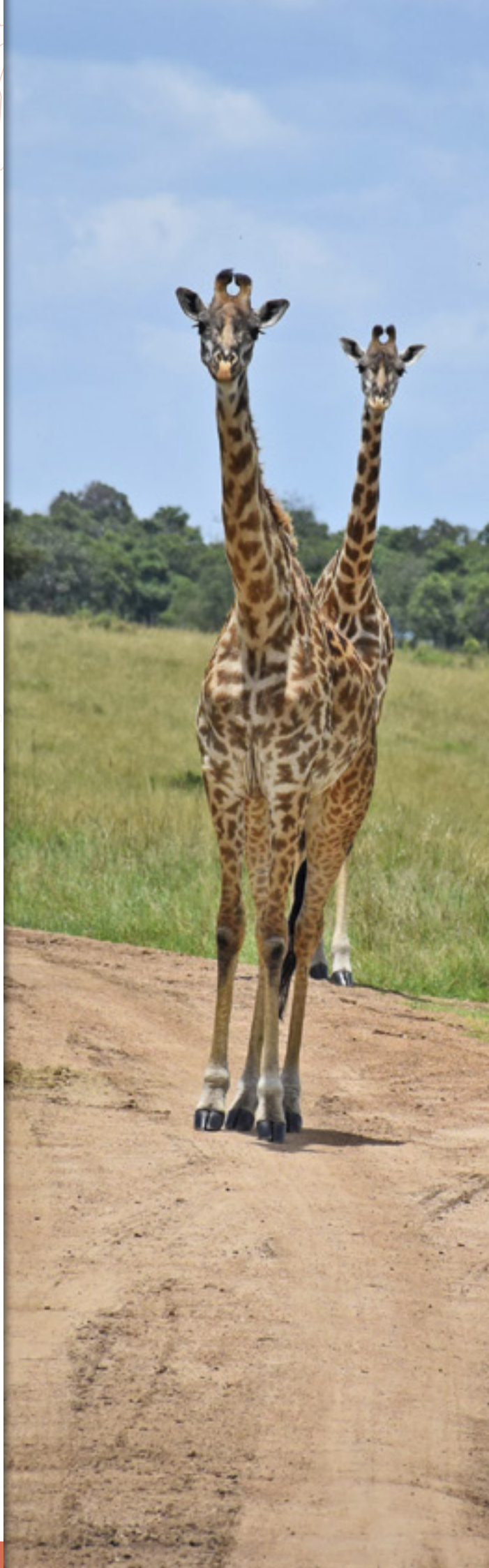
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Joyce O. Imende
National Environment Management Authority

Washington Ayiemba
UNDP

Geoffrey Omedo
UNDP



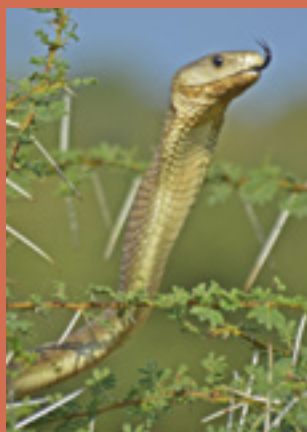




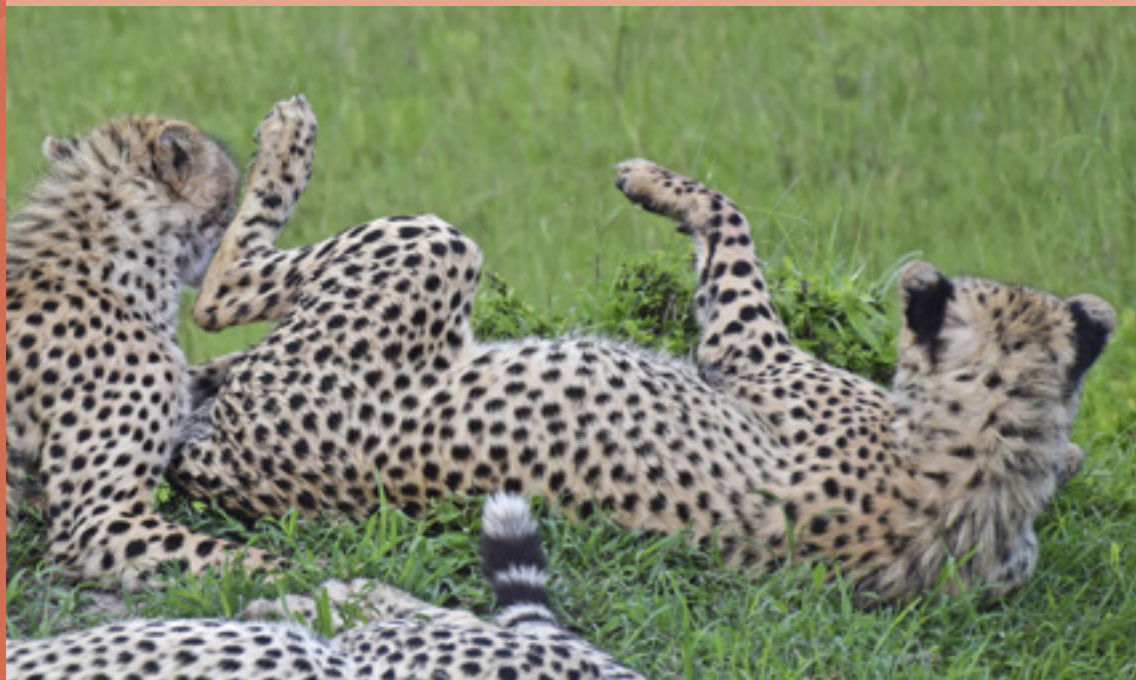
SETTING THE SCENE



... species richness varies within the flora, fauna and microbiomes in these varied ecosystems ...



The black mamba (*Dendroaspis polylepis*, Elapidae) is an example of one of the snake species which serve as a source of venom for use in different biomedical markets.



Kenya is endowed with unique natural ecosystems that constitute biodiversity assets in the terrestrial and aquatic environments. The species richness varies within the flora, fauna and microbiomes in these varied ecosystems in wild situations and within agrobiodiversity. The diverse ecosystems range from mountains, forests, rangelands, arid lands, deserts and croplands to marine and inland waters. These ecosystems exist in an array of biogeographical zones spread along altitudinal gradients from the coast to the snow-capped peaks of Mt. Kenya, reaching over 5,000 masl. One of the most spectacular features is the Great Rift Valley system that extends from the Middle East to Mozambique. Another feature of Kenya's diversity is the Kakamega Forest, a unique tropical rainforest remnant of the Guineo-Congolese forest belt rich in biological diversity.

Kenya's rich biological diversity and traditional knowledge are widely utilized at both the local and global levels for various purposes. A study commissioned by the ABS Capacity Development Initiative, implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH under the GEF-funded ABS Africa project showed a high access demand for Kenya's genetic resources and traditional knowledge at the global level in terms of gene and biotrade and used as feedstock in various sectors, such as agriculture, food industry, flavours, fragrance, cosmetics, biotechnology and pharmaceuticals. The study further revealed that Kenyan genetic resources are widely utilized in various patent claims; over 3,000 species have been cited in 180,000 patents. Some of the key examples include the globally used organisms in biological control and development of living modified organisms (LMOs, for example, the bacterium *Bacillus thuringiensis* (Bt) that is used in the agriculture industry). Some of the strains of Bt that have been successfully used were isolated from Ruma National Park and areas near Homa in Kenya. Trade records further reveal that a wide range of Kenyan biological and genetic resources are utilized widely for agricultural biocontrols. Venom from Kenyan snake species has been accessed for development of biomedical products including anti-venom therapeutics, cancer, stroke and other drugs arising from venom peptides. Kenya's orchids have been accessed and utilized in the floriculture industry.

Kenya is one of the leading exporters, after South Africa, of African bitter aloe gum products. Aloe gum is obtained from five indigenous species: *Aloe secundiflora*, *A. turkanensis*, *A. scabrifolia*, *A. rivaie* and *A. calidophila*. A ground-scoping and feasibility report based on previous studies revealed that Kenya has over 131 million aloe plants with a potential to produce about 2,000 tons of aloe bitter

gum a year. The main market for this aloe gum is in Europe and China. The country also exports gum resins and oleo gum resins and an assortment of essential oils and herbs for various industries. These are accessed as biotrade commodities, but some end up in biodiscovery programmes and hence there is no benefit to Kenya as the provider country under the national ABS framework.

National framework for ABS and associated traditional knowledge

The country is party to various multilateral and regional environmental agreements (MEAs) related to access and utilization of genetic resources and associated knowledge which have been implemented in Kenya through national legislation. Under the Kenyan Constitution, the country commits to fulfill all its international obligations (Constitution Art. 132 (1) (iii) and Art 2(5), (6)). The Constitution confers different rights and obligations to the national government, county governments and the citizens with respect to roles and responsibilities. Under this devolved system, each of the 47 counties develop their own domestic policies and regulations on access and use of genetic resources and associated knowledge which are informed by the national laws. Article 69 of the Constitution obligates the state (where state is defined as the national and county governments) to ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure equitable sharing of the accruing benefits; protect and enhance protection of intellectual property and indigenous knowledge, biodiversity and genetic resources; protect genetic resources and biological diversity and utilize the environment and natural resources for the benefit of the people of Kenya. Aspects of equitable sharing of benefits arising from utilization of natural resources remain a challenge.

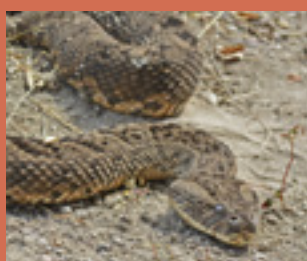
The key relevant MEAs governing access and utilization of genetic resources to which Kenya is party include the CBD and its two protocols, namely the Cartagena Protocol on biosafety and the Nagoya Protocol on access and utilization of genetic resources and associated knowledge and the equitable share of arising benefits; the ITPGRFA; the United Nations Convention for the Law of the Sea; the Convention on International

Trade in Endangered Species of Wild Fauna and Flora; the Union for the Protection of Plant Varieties; the World Intellectual Property Organization and the Biological Weapons Convention. The country is also party to or ascribes to various international bodies and regional protocols. For example, Kenya is a member state of the African Union (AU) and is bound by the African Ministerial Committee on Environment's decision to implement the voluntary AU ABS guidelines.

Kenya does not have an overarching biodiversity or substantive ABS law regulating the access, utilization and sharing of arising benefits. However, there are various legislative frameworks, regulations, policies, strategies and guidelines that regulate access and utilization of the country's genetic resources in line with the Constitution and international obligations. These include Environment Management and Coordination Act (amendment 2015, sections 50–53), which provides for access and utilization of genetic resources, and the 2006 ABS regulation, which governs granting of ABS permits. The Wildlife Conservation and Management Act of 2013 mandates the Kenya Wildlife Service (KWS) to coordinate, conserve, protect and manage the country's wildlife resources. The Act further regulates the granting of user rights on wildlife resources in consultation with local communities. The Forest Act of 2016 conserves the country's forest resources and regulates the use and access of forest resources under their control. The Science Technology and Innovation Act of 2013 registers research institutions and regulates all types of research in the country. The Traditional Knowledge and Cultural Expressions Act of 2016 relates to traditional knowledge and cultural expressions with access to traditional knowledge associated with genetic resources being subjected to additional



Kenya exports gum resins and oleo gum resins and an assortment of essential oils and herbs for various industries.



Venom from Kenyan snake species has been accessed for development of biomedical products ...



Kenya's orchids have been accessed and utilized in the floriculture industry.



legislative procedures. The Act further confers powers to county governments to regulate access and use of traditional knowledge. Universities are regulated under the Universities Act of 2012, where they train and undertake research on various aspects. Under the Universities Act, universities have established intellectual property policies that regulate research activities by students and university lecturers. Other key laws include the Biosafety Act of 2009 that regulates the access and use of genetically modified organisms and safety in research and development of genetically engineered products among others. The Agricultural and Fisheries Act of 2013 promotes agricultural research and development and the Seed and Plant Variety Act of 2016 regulates the use and transfer of genetic resources with the Standard Material Transfer Agreements under the ITPGRFA. The National Museums and Heritage Act of 2006 regulates access of monuments and archeological and fossil materials. There are various laws regulating intellectual property in Kenya, including the Kenya Industrial Property Act of 2001, the Seed and Plant Variety Act of 2016 and the Kenya Copyright Act.

Despite the lack of a substantive ABS law, the domestic measures establish minimum legal standards for the regulatory and administrative processes for access and utilization of genetic resources and associated knowledge that have been established in Kenya, guided by the CBD and Nagoya Protocol and the basic principles on the granting of PIC and MAT prior to access. The steps involved in the de facto process for regulating access to Kenya's biological resources are presented in flow chart form in Figure 1. The scope of the process covers all stages of the product value chain from access, utilization and share of benefits. The resources components include biological diversity, genetic resources, progeny, derivatives, compounds, extracts and intangible resources which include derived digital sequence information and traditional knowledge.

The core steps of the permitting process are these:

1. PIC and MAT between providers and users of the genetic resources and associated knowledge must be obtained. The process of negotiating PIC and MAT includes mapping out clear stakeholders to establish legal entities. Full disclosure of activities, including the access request by the user, is required. The PIC and MAT are signed at the national government, county government and local community levels. Evidence of consultation is required which may include stakeholder meetings for informed consent.
2. A Research Permit by NACOSTI upon evidence of PIC MAT must be obtained.
3. After approval by NACOSTI, the proponent must apply to NEMA for the granting of the access permit. After issuance of the access permit, access to the genetic resources is then allowed.
4. If export or import of the accessed genetic resources or proprietary information is involved, further permits and documentation are required which include establishing a Material Transfer Agreement (MTA) or an Information Transfer Agreement (ITA) with the resource providers. An export/import permit from KWS is issued in the case of wildlife resources in addition to either a phytosanitary certificate from the Kenya Plant Health Inspectorate Service for plants or an animal health certificate from the Veterinary Services Department for animal genetic resources.

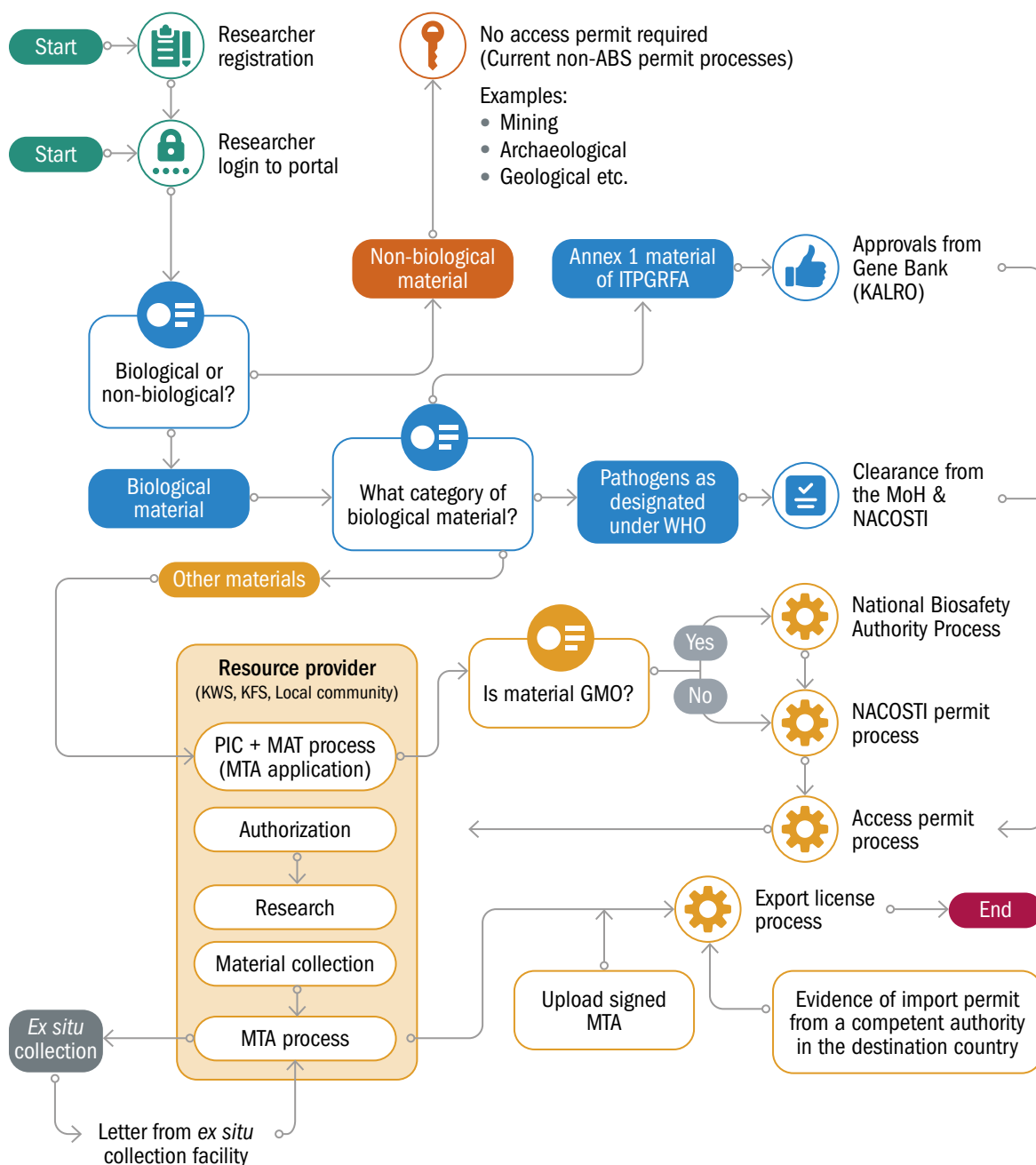
PERMITTING REQUIREMENTS FOR ACCESS TO KENYA BIOLOGICAL RESOURCES

Introduction:

1. What qualifies for an access permit:

- Biological resources
- Genetic resources
- DNA/RNA, bio-extracts
- Chemical resources
- Derivatives
- Progeny
- Traditional knowledge
- Digital sequence information and associated information

2. This is applicable to both imports into Kenya and exports from Kenya



Abbreviations not identified elsewhere in text:

KALRO = Kenya Agricultural & Livestock Research Organization; MoH = Ministry of Health; KFS = Kenya Forest Service; GMO = Genetically modified organism; WHO = World Health Organization

FIGURE 1 Flow chart of the process for acquiring permission for accessing and utilizing Kenya's biological resources



A second project involves biodiversity of soda lakes microbial resources for development of natural industrial products.



The third project explores indigenous local resources and traditional knowledge associated with genetic resources for development of phytomedicines and drug therapeutics in the management of COVID.



Investigating the potential of local species for biodiversity cases and ABS agreements

Various initiatives at the national level are being undertaken to implement model practical projects for informed ABS policy development. These initiatives include the biodiversity projects under the UNDP-GEF Global ABS Project and the United Nations Environment Programme (UNEP)-GEF-Nagoya Protocol Implementation Fund (NPIF)-Soda Lakes Project. The Global ABS Project aims at strengthening legal and policy frameworks, building confidence between resource providers and users and building capacities of local communities to share benefits arising from use of genetic resources and associated traditional knowledge.

Accomplishments of the Global ABS Project:

- By means of a national consultative engagement process of key stakeholders, a draft concept ABS law been developed and submitted to the Ministry of Tourism and Wildlife. Further the Ministry is reviewing its wildlife law which includes sections on access benefits and incentives which will borrow heavily on the developed draft ABS law concept law.
- A model system for granting of PIC and MAT at the county level has been initiated through the establishment of ABS County Technical Committees in three pilot counties. These committees act as a link between national and county government and local communities to provide for legal clarity and certainty on granting PIC and MAT.
- Two key guidelines are being finalized which will have major impact on the country's legal landscape. These are the guideline on access, utilization and sharing of benefits arising from the country's traditional knowledge associated with genetic resources and the national guideline on intellectual property and ABS policy. The intellectual property and ABS policy is a guideline to streamline intellectual property and ABS management at research and university institutions. This will enhance compliance enforcement and monitoring, thereby contributing to more benefits.

Three model biodiversity projects are being implemented. One project, funded by the Global ABS Project, involves the plant species *Mondia whitei*, Apocynaceae, and agreements between the V. Mane Fils Company and a local community within the Kakamega Forest ecosystem, namely, the Kakamega Natural Forest Catchment Organization (KANFCCO). A second project is under the auspices of the UNEP-GEF-NPIF Soda Lakes Project involving biodiversity of soda lakes microbial resources for development of natural industrial products with agreements among local universities, providers and industry. The third project is funded by the Kenyan government to explore indigenous local resources and traditional knowledge associated with genetic resources for development of phytomedicines and drug therapeutics in the management of COVID. The government project draws its lessons from the UNEP-GEF-NPIF Soda Lakes Project and the Global ABS Project.



EYEWITNESS STATEMENT



Mr Luke Otiipo

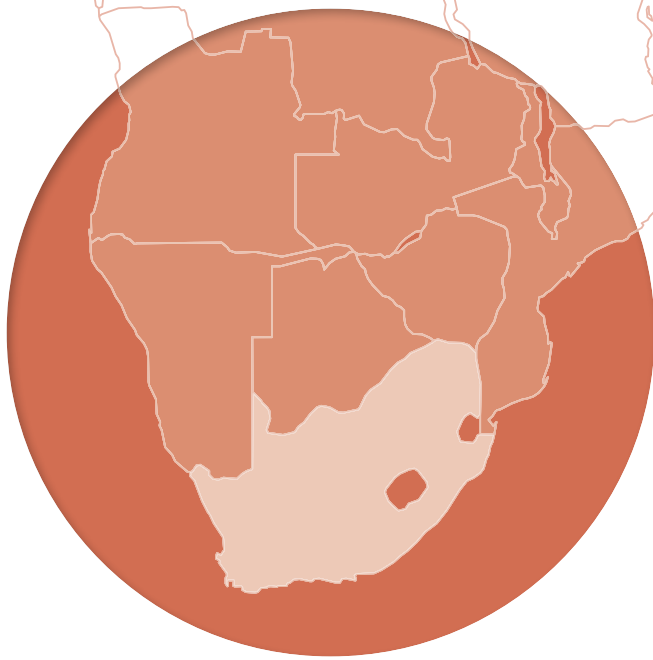
"The Governor of Kakamega County, one of the devolved units in Kenya, established the first County ABS Technical Committee with support of Global ABS Project in 2018. At same time, the local community KANFCCO was identified as the relevant entity to enter into PIC and MAT agreements with the V. Mane Fils Company for utilization of Mondia whitei. Various capacity-building programmes were undertaken for both the County ABS Committee and the local communities on ABS. Since then, this model was presented to the 6th devolution conference and recommended to be cascaded in all the 47 Counties. Now the Kakamega County ABS Technical Committee has effectively negotiated for various PICs for research and development and the county has become a model for ABS governance at the county level in the Country, courtesy of the Global ABS Project."

MR LUKE OTIPO, Deputy Director, Deputy Governor's Office, Chair of County ABS Technical Committee



... the local community KANFCCO was identified as the relevant entity to enter into PIC and MAT agreements for utilization of *Mondia whitei* ...





REPUBLIC OF South Africa

A major breakthrough in
the implementation of the
Nagoya Protocol using Rooibos
to benefit local communities

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and the Environment*

Ruhlani Lehloka

UNDP-Country Office, South Africa







SETTING THE SCENE



... South Africa is home to the species *Aspalathus linearis*, *Adansonia digitata* and *Sclerocarya birrea* ...

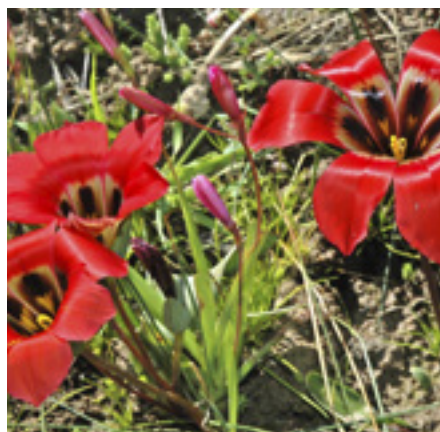


... essential oil extracted from the seeds of the African baobab and marula for formulations of cosmetic products ...



The Cape Floristic Region of South Africa is home to the species *Aspalathus linearis* which is endemic to South Africa. This species has great economic value as it is traded both locally and internationally as 'rooibos tea'. It was first used by the indigenous people of the Cederberg area and is currently a very popular tea. It is considered healthy as it is caffeine free, low in tannins and rich in antioxidants. It is not only enjoyed as an herbal tea, but is also used as an ingredient in cosmetics, in slimming products, as a flavouring agent in baking, cooking and cocktails, and even as a treatment for infants who are prone to colic.

The Vhembe Biosphere Reserve located in Limpopo Province of South Africa aims to conserve the area's unique biological diversity while simultaneously supporting and promoting much needed sustainable development. This area is home to diverse species such as *Adansonia digitata* (African baobab) and *Sclerocarya birrea* (marula), which are both protected tree species with great economic value from essential oil extracted from their seeds in which there is both local and international trade for formulations of cosmetic products. Indigenous peoples and local communities in this area also use these species for various traditional applications. The majority of the land where this biodiversity occurs naturally falls under the traditional leadership structures, which made it a perfect location for South Africa to implement the third component of the UNDP-GEF Global ABS Project, development of a Biocultural Community Protocol.



National framework on ABS and associated traditional knowledge

South Africa has made remarkable progress since it became a party to the CBD in 1995 by taking policy and legislative steps towards promoting conservation, sustainable utilization and ensuring fair and equitable sharing of benefits arising from the utilization of indigenous biological resources and their associated traditional knowledge. Subsequently, South Africa ratified in 2013 the Nagoya Protocol on ABS, of which the main objective is the fair and equitable sharing of benefits arising from the utilization of genetic resources.

One of the Constitutional mandates of the South African Department of Forestry, Fisheries and Environment (DFFE) is to develop policies, legislation and other measures that regulate bioprospecting and biotrade activities. South Africa is one of the first countries to develop and implement a regulatory framework on bioprospecting and ABS. The key ABS provisions are contained in Chapter 6 of the *National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)* (NEMBA) and the Bioprospecting, Access and Benefit Sharing Regulations (BABS Regulations), which regulates bioprospecting activities involving the utilization of any indigenous biological resources and associated traditional knowledge or the export from South Africa of any indigenous genetic and biological resources for the purpose of bioprospecting or any other kind of research. The steps in the permitting process are detailed in Figure 1.

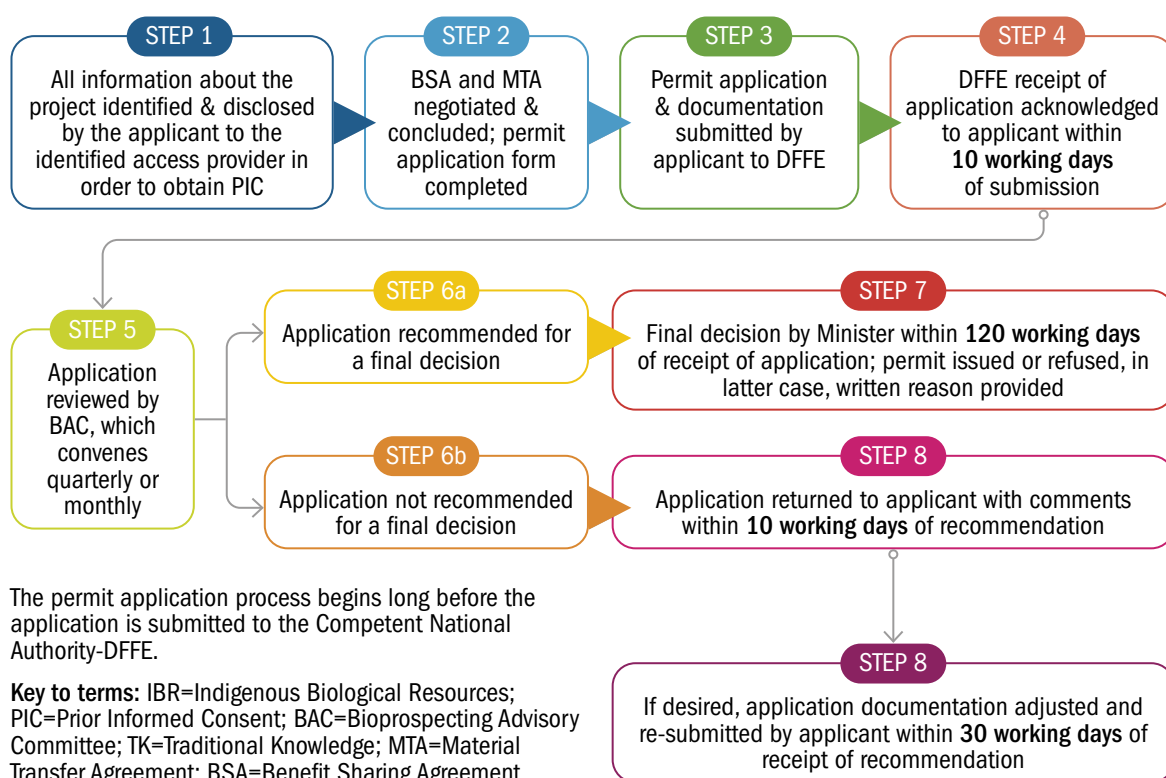


FIGURE 1 Steps of the ABS permitting process

The Department of Forestry, Fisheries and Environment initiated the process of amending the NEMBA with financial support from the Global ABS Project for stakeholder consultation. The draft amendment was crafted by a legal team in consultation with all stakeholders (industries, academic and research institutions, IPLCs and government and non-government institutions) and various intergovernmental structures for comments and inputs were considered.



... in 2014,
DFFE conducted
a study to investigate and
reveal all the rightful holders
or owners of traditional
knowledge associated
with rooibos ...



This was the start
of the process to
ensure that the rightful
traditional knowledge
holders get benefits from
the commercial utilization
of rooibos in the research
and development of new
products such as:



medicines



beverages



food flavours



cosmetics



BIODISCOVERY CASES

Negotiating ABS agreements and learning about
business models of industries that use genetic
resources and traditional knowledge

1 Rooibos

There is a long history of commercialization of rooibos in South Africa and it was important for industry players involved in this sector to comply with NEMBA and the BABS Regulations. There had been doubt by the industry about who is the legitimate knowledge holder associated with the use of rooibos, although it is known that the Khoi-khoi and San peoples of South Africa have used the plant for generations. To ascertain the legitimate holders of traditional knowledge associated with the use of rooibos, in 2014, DFFE conducted a study to investigate and reveal all the rightful holders or owners of traditional knowledge associated with it. This was the start of the process to ensure that the rightful traditional knowledge holders get benefits from the commercial utilization of rooibos in the research and development of new products such as medicines, beverages, food flavours and cosmetics in line with NEMBA and the BABS Regulations. The financial support from the Global ABS Project made possible the branding and printing of sufficient copies of the study report for distribution to the communities.

The negotiation process was concluded in March 2019, followed by an extensive community outreach programme organized by the South African San Council (SASC) and the National Khoi-San Council (NKC) jointly with DFFE, to share the outcomes of the negotiations with the broader Khoi-khoi and San communities in South Africa, which was concluded in August 2019.



With the involvement of an independent resource economist and a mediator, the parties reached common understanding. The agreement is based on 1.5% of the farm gate price to be paid by the processors to the San and the Khoi-khoi peoples of South Africa in a form of annual levy for the commercial utilization of traditional knowledge associated with rooibos. The parties also agreed that this industry-wide benefit sharing agreement on rooibos will be a pilot agreement, lasting for one year, due to a deficiency of the industry data necessary to inform a long-term ABS agreement. This process was also facilitated in consultation with technical officials and strategic partners from the Departments of Trade and Industry, Science and Innovation, Agriculture, Land Reform and Rural Development and Traditional Affairs, including CapeNature. This pilot agreement was eventually launched by the Minister of Forestry, Fisheries and the Environment on 1 November 2019, at iKhwa tuu, Yzerfontein, Western Cape Province.



2 Baobab and marula fruit

The rich biodiversity in the geographic area of the Vhembe Biosphere Reserve under six Venda traditional authorities (Makuya, Manenzhe, Mutele, Rammbuda, Thengwe and Tshikundamalema) attracts a high number of companies involved in bioprospecting and biotrade, businesses that are directly dependent on the raw materials collected from these communities. The most utilized species are baobab and marula, the fruits of which are mostly used as natural ingredients in the beverage and cosmetic industries in South Africa and abroad. The Competent National Authority, the six traditional authorities and the industries learned lessons and gained experience in the practical implementation of NEMBA, BABS Regulations and the Nagoya Protocol on ABS, starting with the PIC process, to the negotiations of the material transfer agreements and the benefit sharing agreements, to the issuance of relevant bioprospecting and biotrade permits and the approval of such agreements by the Minister of Forestry, Fisheries and the Environment.

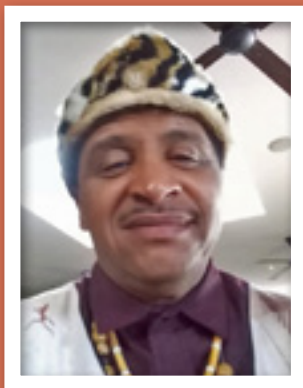


The rich biodiversity in the geographic area of the Vhembe Biosphere Reserve under six Venda traditional authorities attracts a high number of companies involved in bioprospecting and biotrade ...





EYEWITNESS STATEMENTS



Mr Stanley Peterson



The assistance, guidance and support received from DFFE throughout the negotiation process was very crucial in finalizing ABS agreements with the abovementioned stakeholders.



"For generations and centuries, our Khoi-khoi and San Communities suffered exploitation for our traditional knowledge on plant species. The benefits from those plant species, rightfully due to us, were also taken away. We had limited knowledge about legislation and laws protecting us such as the NEMBA and the Nagoya Protocol on ABS. When we started to approach the different industries, companies and individuals to comply with these laws, it was difficult. We did not have experience, expertise, money, resources or negotiation skills.

"The assistance, guidance and support received from DFFE throughout the negotiation process was very crucial in finalizing ABS agreements with the abovementioned stakeholders. Natural Justice played a critical role by providing relevant training on negotiation skills, knowledge about ABS, traditional knowledge, intellectual property rights, the Nagoya Protocol, the NEMBA and other environmental legislation.

"At this point, I wish to pay tribute to two of my colleagues who passed away during the negotiation process of the industry-wide benefit sharing agreement – Dr Mario Mahongo (Chairperson of the South African San Council) and Mr Ernest du Toit (main negotiator of the South African Rooibos Council). This was a great loss, but it also motivated us to carry on as the battle ahead of us still had to be won.

"I went against all my standards and principles to share my experiences and challenges in English, because I am a Khoi-khoi. I did it for the sake of love, unity and prosperity and for everybody who read my story, a story worth reading, a story worth remembering, a story worth acknowledging by all role-players mentioned in this article. I love my language and do all I can to promote, preserve and protect it."

MR STANLEY PETERSON, National Khoi-San Council (Khoi-khoi) and Griqua National Leader

"The SASC represents the San Communities in South Africa, namely the #Khomani San, !Xun, Khwe and !Xam. From the outset, our main goal was to ensure that there was recognition of our community's contribution to the industry and the restoration of dignity. During the nine years of negotiations, as the SASC representatives, we encountered various challenges, which we are proud to have been able to overcome.

"At the start of the negotiations process, DFFE occupied the important role of having been a facilitator as outlined in terms of NEMBA and BABS Regulations. With the assistance and support from DFFE, we managed to conclude and sign this industry-wide Benefit Sharing Agreement.

"We also felt that it was critical to mobilize the Khoi-khoi people as a community with whom we share the knowledge associated with the use of rooibos. The idea was also to ensure that the rooibos farming communities are part of the negotiation process. Hence, the NKC partnered with SASC in the negotiations process.

"It was a challenge to address industry's concerns regarding financial information, business confidentiality as well competition. We had to work on various models without actual financial figures (market and sales information from the industry) based on only the information available in the public domain. However, the industry ensured that everyone clearly understood the value chain of the rooibos industry properly.

*"The strategy used by the SASC to ensure continuous reporting to the community on the developments of the negotiation and to reaffirm our mandate was introduction of the concept of an **Agenda within an Agenda**. This worked perfectly as we did not have to worry about funding support for meetings to provide feedback on the negotiations.*

"Finally, a signing ceremony was held on 1 November 2019, graced by the Minister of Forestry, Fisheries and the Environment, Khoi-khoi and San communities and the rooibos industry. This auspicious occasion caught the attention of the world."

MR COLLIN LOUW, Chairperson jointly with Ms Leana Cloete, Director of the South African San Council

"I am very happy that the negotiation phase is behind us. Any industry that would want to engage in negotiating and concluding an industry-wide benefit sharing agreement needs to be very patient.

"From the perspective of the rooibos industry, the large numbers of participants in the value chain meant that individual benefit-sharing agreements for every possible transaction would not have been workable. This is why there must be an industry-wide agreement. During the process, we found an urgent need for review of NEMBA in relation to bioprospecting and ABS.

"We came across several challenges during the negotiation process, including, but not limited to:

- *definitions of various items such as biotrade, access and bioprospecting*
- *identity of the actual parties with whom the Rooibos industry needed to engage*
- *whether rooibos did actually fall into the scope of NEMBA*
- *difficulty in communicating the structure of the industry*
- *implication of the Indigenous Knowledge Systems (IKS) Act (i.e., Protection, Promotion, Development and Management of Indigenous Knowledge Act, 2019 (Act No. 6 of 2019) in the process.*

"In conclusion, during this process I got to know a bit more about the history of our country and met some interesting characters along the way."

MR DAWIE DE VILLIERS, responsible for compliance, legal aspects and GIS in the South African Rooibos Council

"Overall, it was challenging to bring two parties with divergent views together to the negotiating table; although, eventually, a common understanding was reached. This industry-wide agreement is evidence that there is no one solution for ABS challenges. In addition, partnership between Industry and IPLCs is a key for successful implementation of national ABS laws and the Nagoya Protocol on ABS. With the properly negotiated and concluded benefit sharing agreement in place, issuing of associated ABS permits and publishing of IRCCs in the ABS Clearing House becomes effortless."

MS LACTITIA TSHITWAMULOMONI, National Focal Point: Nagoya Protocol on ABS, Department of Forestry, Fisheries and the Environment



Mr Collin Louw



Mr Dawie de Villiers



Ms Lactitia
Tshitwamulomoni



... partnership between Industry and IPLCs is a key for successful implementation of national ABS laws and the Nagoya Protocol on ABS..

IPLCs' capacities, Biocultural Community Protocols

1. Development of Khoi-khoi People's Rooibos BCP. The process for negotiation of the industry-wide agreement also highlighted the need for the IPLCs to strengthen their organizational structure through a BCP. ABS is very complex in nature as it requires involvement of range of stakeholders and experts, i.e., lawyers, economists, business experts, mediators, government representatives, IPLC experts and others. It is therefore critical that IPLCs have formal leadership to be able to represent the overall communities. These structures at level of the communities are critical for successful implementation of the Nagoya Protocol on ABS as well as ABS laws at national level. The BCP was eventually developed with the support from Natural Justice. This BCP outlines the procedures, rights and responsibilities under customary law or systems as the basis for engaging with external stakeholders such as governments, companies, academics and NGOs.

Through this BCP and the industry-wide benefit sharing agreement, the communities, inclusive of all men, women and youth, are entitled to a fair and equitable share of the benefits derived from the commercial utilization of their traditional knowledge associated with the use of rooibos, as part of their inheritance. Further, about 300 farmers are already established in the commercial cultivation of rooibos in the Western and Northern Cape Provinces. In addition, a total of 210 of these are communal small farmers. These regions were hit by drought in the recent years which affected raw material productions. However, DFFE prioritized some of the smallholder farming communities to receive financial support in the current cycle of the Environmental Protection & Infrastructure Programme Funding for the biodiversity economy. The farming community has created employment opportunities at a community level across the value chain, especially, during the cultivation, handling, processing, development, manufacturing and packaging of the rooibos products. Efforts are currently in motion to transform rooibos farming into a meaningful business for smallholder farmers and traditional knowledge holders with the view of moving them higher in the value chain. This would contribute to economic development of the country.

2. Development of BCP for the six Venda traditional authorities. Developing a BCP was prompted by the high number of ABS projects targeting fruit of African baobab and marula trees that naturally occur in these communal areas. Over the past years, DFFE received enquiries from the communities regarding community representation in terms of who should provide PIC, negotiate and enter into material transfer and benefit sharing agreements. The BCP was an important tool considered by these communities to ensure that the interconnection of their land rights, socio-economic situation, environmental concerns, customary laws and traditional knowledge, are better placed and create a great platform for communities to determine for themselves how and on what basis they will engage and grant PIC, negotiate and enter into agreements with a variety of actors and stakeholders. With financial support from the Global ABS Project, DFFE embarked on a project to develop a BCP covering these six traditional authorities because they share the same biodiversity and customary systems in their jurisdictions. While this project was planned to end in May 2020, it was heavily affected by the disruption of the COVID-19 pandemic related restrictions.

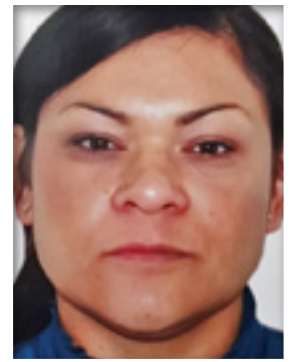


MESSAGE FROM AN SDG ADVOCATE

"The industry-wide benefit sharing agreement on traditional knowledge associated with the use of rooibos contributes to SDG 1 (Poverty alleviation) and SDG 8 (Decent work and economic growth). The agreed-upon annual royalty payment would contribute towards the establishment of sustainable community-based projects aimed at creation of decent jobs, economic growth and poverty alleviation. In addition, rooibos is now a crop in the country. About 70% of rooibos plant materials come from commercial cultivations and 30% from the wild population. This agreement set in motion a partnership between industry and the community which is aimed at ensuring sustainability and growth of the industry whilst ensuring continuous sharing of fair and equitable benefits with the communities. This includes the role both communities and the industry played in terms of identifying suitable land for cultivation and utilization, among other things. Overall and in terms of long-term benefits, this project will promote inclusive and sustainable economic growth, employment and decent work for all.

"The BCPs also contribute to SDG 15 (halt biodiversity loss). The communities involved in these BCPs recognized the intrinsic value of biological and cultural diversity in their jurisdictions and the critical role they play in maintaining ecosystems that provide essential services which are critical for sustainable development and livelihoods needs of the communities."

MS NATALIE FELTMAN, Director, Bioprospecting and Biodiversity Economy,
Department of Environment, Forestry and Fisheries



Ms Natalie Feltman



... this project will promote inclusive and sustainable economic growth, employment and decent work for all.

Rooibos plant materials come from:

COMMERCIAL CULTIVATIONS

70%

WILD POPULATION

30%



SDG 1
No Poverty



SDG 8
Decent work and economic growth



SDG 15
Life on land





ARAB STATES



Jordan

Sudan



THE HASHEMITE KINGDOM OF Jordan

Assessing the legal implications
of documenting traditional knowledge
holders for ABS under the
Nagoya Protocol

Authors

Mustafa Al Shudiefat

*Director of Programmes, Royal Botanic
Garden of Jordan*

Mohammad Abumughli

*Project Officer, UNDP-GEF Global
ABS Project in Jordan*







SETTING THE SCENE



Due to Jordan's varied terrain, it hosts diverse ecosystems and many endemic species ...



2,531

vascular
plants



78

mammal
species



425

birds



1,000

fish



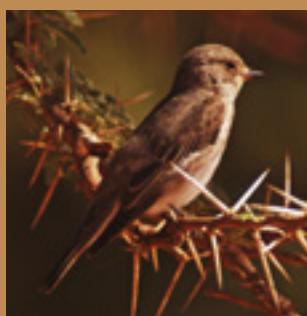
250

coral



102

herpetofauna



Jordan is famous for its deserts but is in fact divided into four different biogeographical zones; Mediterranean, Irano-Turanian, Saharo-Arabian and Sudanian or Tropical penetrations. Within these diverse zones, there are 13 different vegetation types each representing different elements of flora and fauna. This variation of physical environment is strongly reflected in the diversity of life in the country in terms of natural heritage along with its associated cultural values and is related to biological diversity.

Due to Jordan's varied terrain, it hosts diverse ecosystems, which are divided into four major groups: desert, scarp and highland, subtropical and freshwater. The diversity of Jordan's flora and fauna are indicative of their many origins. However, the country also has many endemic species. Of its 2,531 recorded species of vascular plants, representing about 1% of the world flora, seven are endemic to Jordan and 100 are endemic to the broader region that includes Jordan. There are 78 mammal species and 425 bird species. Jordan's avifauna is especially rich because of its geographical location by the Great Rift Valley, lying within the route for migratory north palearctic waterfowl. The Gulf of Aqaba hosts more than 1,000 species of fish, 250 species of coral, in addition to sponges, snails, crabs and sea turtles. Jordan also hosts 102 species of herpetofauna, the majority of which are reptiles.

Drought is the main natural hazard facing Jordan in addition to the potential for periodic earthquakes. The main issues related to the environment in the country are limited natural freshwater resources, deforestation, overgrazing, soil erosion, desertification and pollution. To combat these issues, Jordan signed many Multilateral Environmental Agreements and is focused on protecting and restoring many threatened locations.

National framework on ABS and associated traditional knowledge

Jordan is advancing towards sustainable and equitable use of genetic resources by developing a culturally acceptable, inclusive and beneficial legal framework for implementing ABS that is compliant with the Nagoya Protocol of the CBD. After a series of consultation sessions, a draft ABS bylaw was formulated and was preliminary endorsed by the Ministry of Environment and is further awaiting final endorsement by the Cabinet.

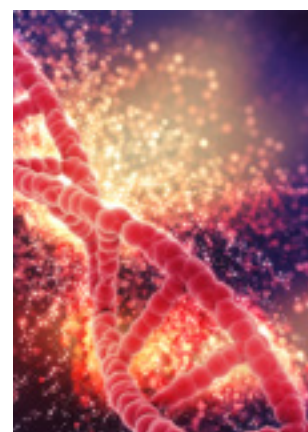
"The national ABS bylaw is a vital tool that will be used as a guide to promote the ABS concept nationally and locally."

ENG. BILAL QTAISHAT, Director of Biodiversity Directorate at the Jordan Ministry of Environment

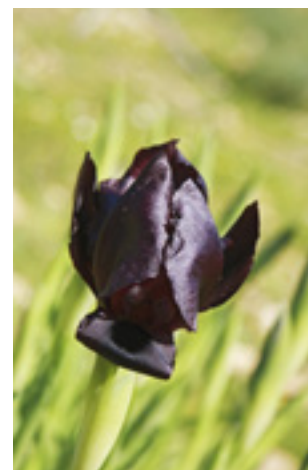
Under the patronage of Her Royal Highness Princess Basma Bint Ali, Chairperson of the National Biodiversity Committee and Founder of the Royal Botanic Garden of Jordan, the workshop *"Implementation of Access and Benefit Sharing (ABS) from the use of Genetic Resources in Jordan: A practical approach"* was organized by the UNDP-GEF Global ABS Project. The workshop had three main objectives: first, to fulfil the last steps for the finalization and approval of the ABS bylaw that will operationalize the ABS procedures and legal framework in Jordan; second, to finalize the analysis of the bioprospecting/ biotrade situation in Jordan. To achieve this aim, ABS stakeholders considered and validated a preliminary list of genetic resources, species and ABS products with business potential and considered opportunities for the local communities' socio-economic development. Finally, the workshop supported the formulation of the sector strategy for promoting or initiating research and biodiscovery partnerships and proactively engaging local communities and the private sector. The workshop gathered experts from the Ministry of Environment, the Royal Botanical Garden, the National Agriculture Research Centre, the Royal Marine Conservation Society of Jordan, the Royal Society for the Conservation of Nature, researchers from different universities, other national stakeholders and the private sector.



Bilal Qtaishat



Jordan is advancing towards sustainable and equitable use of genetic resources ...





HRH Princess
Basma Bint Ali



... it is our duty to
ensure this knowledge is
passed down to future
generations ...

Jordan's journey with traditional knowledge

Due to the importance of giving priority for documenting and investigating traditional knowledge of communities in Jordan and examining how such knowledge has changed over time, UNDP has collaborated with the Royal Botanical Garden (RBG) to establish an inventory of the traditional knowledge associated with biological resources in Jordan, through exploring and documenting the existing local community's knowledge and practices associated with biological resources.

The RBG was well positioned for this task, having been founded as a non-governmental, non-profit entity in 2005 to conserve the native flora and biodiversity of Jordan by propagating and displaying native plants, restoring habitats at the ecosystem level, conducting research, demonstrating sustainable practices and sharing information. The RBG envisions a future where there is no longer a need for environmental conservation, where the interdependency between people, plants and ecosystems is well understood and where all people are assured of a dignified, sustainable life. The conservation-oriented RBG has three main components:

1. Science and Conservation – the RBG is focusing on pure plant conservation and scientifically validating traditional knowledge in terms of ethnobotany.
2. Education and Community Development – the RBG is developing interpretational material as a means of translating scientific findings into layman's language for use in educating the general public and giving value to these important genetic resources.
3. Sustainable Living – RBG focuses on community sustainability by supporting income-generating microprojects for the local communities and eco-living.

"Over the centuries, communities across the globe have unlocked the secrets of their genetic resources. This close-knit relationship between them, is what we now call 'traditional knowledge,' which is the very essence of a people's identity. Thus, it is our duty to ensure this knowledge is passed down to future generations by documenting and preserving it, but above all we must ensure its sovereignty remains under the respective local communities, as it is their right."

H.R.H. PRINCESS BASMA BINT ALI, Founder of the Royal Botanic Garden and Head of the national CBD committee



To achieve traditional knowledge documentation, RBG performed a comprehensive review of all available literature and information related to classification and uses of biological resources and developed a survey design that contains objectives, questions, people to be targeted, biogeographical zones and methodologies. Multiple methodologies were used, such as interviews, focus groups, observations and collection of images and audio recordings from the communities themselves. Community contacts included key persons or chief of the community or tribe, elders, farmers, a community council or whatever formal representative person or body was entitled to engage and transmit data and information in the form of traditional knowledge. Successful *in situ* collection relies on fieldwork and continued interaction with community members, thus leading to successful traditional knowledge documentation.

A structured questionnaire was designed by taking into account previous research in Jordan, the World Intellectual Property Organization traditional knowledge framework (2017, *Documenting Traditional Knowledge – A Toolkit*. World Intellectual Property Organization: Geneva) and the Nagoya Protocol. Later, several pre-testing training sessions were conducted with field researchers on the structured questionnaire. The field researchers were asked to get the consent of the respondents before starting the interview for audio recording, besides getting the GPS location of the respondent following the World Intellectual Property Organization framework.

The structured questionnaire was administered from March through December 2019 to a sample of 300 local people. Sampling considered all age groups and gender equity and there was no specific profile for selecting respondents beyond their willingness to participate; therefore, the respondents were targeted randomly. Data were collected using a face-to-face interview method. In addition, many focus groups were conducted in different biogeographical zones. The project succeeded in documenting more than 242 traditional knowledge-related plant species, 61 trees and shrub types, and 16 mushroom species. More than 220 plant species were reported as being widely distributed in their habitats and accessible over all the year. Most of the plants were used either for medicinal purposes or for food; only a few plant species were documented as being used for cosmetics and dyes. Around 87 plant species were documented as rare or not easily available due to dispersed distribution in some regions.

Faunal bioresources were divided into two classifications to facilitate distinguishing the traditional knowledge derived from them: (1) marine species and (2) terrestrial mammals, insects and bird species. The recorded marine species comprised about 20 species that are widely distributed in their habitats and another 23 are rare or not easily found. Similarly, the survey recorded 71 species of mammals, insects and birds that are widely distributed and easily available and another 52 that are rare or widely dispersed and not easily available.





Sources of knowledge on traditional uses of biological resources were found to be from the parents and ancestors, relatives and friends of the respondents, in that same order of importance. It was clear there was a weakness in traditional knowledge transfer between age groups, especially for the knowledge of plants that are not easily available and for toxic plants, mushrooms and animal products that are not available anymore. On the other hand, traditional knowledge transfer among other groups reflected a random behaviour by all respondents, which indicated the difficulty in identifying a common tendency of traditional knowledge transfer between generations.

The lack of communication between people within their family and community due to changing dynamics of lifestyles was one of the causes of the weak transfer of knowledge between generations. Knowledge about the uses of biological resources is not as it used to be in the past, the level of knowledge decreased which could result in a loss of value for some biological resources. The vast and extensive development of the internet and social media changed the methods used to obtain knowledge and information regarding our life. Youth are the major consumers and users of the internet and it became a major source, if not the

only source, of knowledge and information about any need of any kind. Therefore, the importance of local knowledge from traditional sources has decreased. This situation requires an establishment of trusted, valid and reliable internet websites that provide and preserve the local knowledge based on the national ABS regulation to avoid illegally misappropriated use of traditional knowledge. The level of awareness regarding the knowledge related to the bioresources was very high as the participants considered it as a treasure that must be documented, preserved and transferred to the future generations.

The alternative resources available today affect the value of the traditional usages of biological resources, especially the uncommon medicinal plants, since modern techniques for benefiting from such biological resources are much more practical and efficient. The misuse of such biological resources also led to increasing mistrust of the benefits and usages of such resources. Good examples are certain medicinal plants with very precise usage protocols, such that extra or excessive uses lead to toxicity instead of the desired medication. Thus, there is a dire need to document and test uses of biological resources through official bodies and with comprehensive scientific procedures.

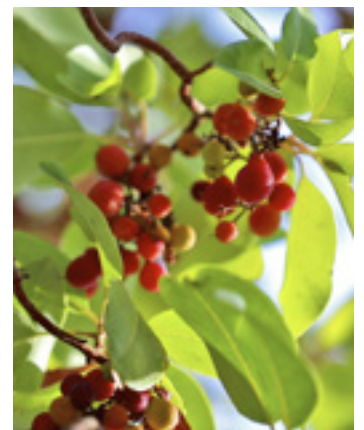
RBG believe that the project succeeded in establishing a baseline and conducted a comprehensive national documentation of the natural biological resources according to international standards. Even so, conservation of traditional knowledge still needs more effort to prevent this valuable knowledge from being lost after the death of its old secret keepers. Therefore, it is necessary to build on what was achieved and further studies are highly recommended to document these resources with scientific approaches and to explore means of assessing and integrating traditional knowledge in specific zones to compare the different uses and status for each biological resource. Furthermore, deeper investigation must be conducted on the nutrition and medicinal values of genetic resources as well as on market opportunities for them. By means of scientific evidence on nutrition and medicinal values and market opportunity, more people and companies will be attracted toward conserving and using sustainably the wild edibles that will help in addressing human and food security issues along with conservation of traditional knowledge of the Jordanian community. traditional knowledge should be well recognized in a formal sense as a source of information for ABS approaches and as a tool to preserve, conserve and sustain the genetic resources base and the sustainability of the biodiversity of ecosystems.



The level of awareness regarding the knowledge related to the bioresources is considered as a treasure that must be documented, preserved and transferred to the future generations.



... there is a dire need to document and test uses of biological resources ...

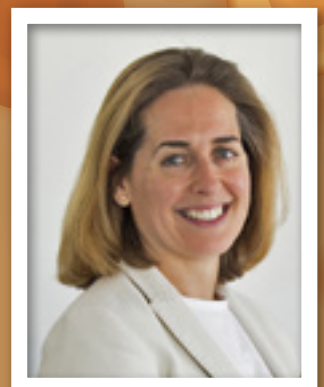


ABS and SDGs

UNDP in Jordan is providing technical capacities to the Government to help achieve SDGs. Through its programmes, Environment, Climate Change and DRR; Inclusive participation and institutional strengthening; Inclusive growth; and Sustainable livelihood, UNDP is embarking on a journey to place Jordan on the map of countries that are excelling towards sustainability. Local communities are vital players in the sustainability outreach UNDP is trying to achieve.

"Local communities play a vital role in protecting genetic resources and genetic diversity. They are our real chance to meet the much-needed SDGs and to recalibrate the balance between people and planet."

SARA FERRER OLIVELLA, UNDP Resident Representative, Jordan



Sara Ferrer Olivella



REPUBLIC OF THE Sudan

Examining the potential
of senna under a strengthened
national ABS framework and
the Nagoya Protocol

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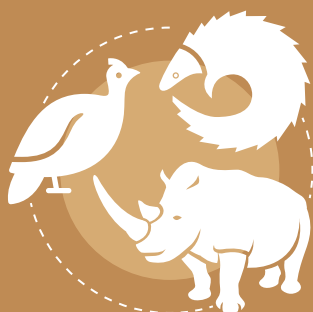




SETTING THE SCENE



... Sudan is rich in biodiversity within diverse environmental systems endowed with diverse flora and fauna ...



Vegetation diversity ranges from:



desert



semi-desert



woodland
savannahs

... diverse forests and rangelands support about 116 million head of:



cattle



sheep



goats



camels



several million
wild animals



Sudan is situated in northeast Africa and occupies about 1.8 million km², the second largest country in Africa. It lies between latitudes 10° and 22° N and longitudes 22° to 38° E. Its landscape consists primarily of a gently sloping plain, with the exception of the Jebel Marra, the Red Sea Hills and the Nuba Mountains. Sudan shares borders with seven countries without natural obstacles, which has led to the presence of trans-boundary tribes and local communities as well as trans-boundary genetic resources. It has a coastline bordering the Red Sea.

Sudan is endowed with a wide range of ecosystems and species diversity. The ecological zones extend over a wide range from the desert in the extreme north to the savannah. This unique geographical coverage makes Sudan rich in biodiversity within diverse environmental systems endowed with diverse flora and fauna. Vegetation diversity ranges from desert and semi-desert drought-resistant, scanty types of vegetation in the north through woodland savannahs of low rainfall areas in the central and southern parts of the country. Both wild and cultivated indigenous plant species are known for their importance in the folk medicine in Sudan. Diverse forests and rangelands are important to traditional livelihoods and support about 116 million head of cattle, sheep, goats and camels and several million wild animals. The wildlife species occur within and outside protected areas.

National framework on ABS and associated traditional knowledge

Sudan ratified the CBD in 1995 and the Nagoya Protocol entered into force at the required time on 12 October 2014. Sudan is one of the first fifty countries achieving ratification of the Nagoya Protocol in a timely manner in 2014, placing it among those countries who have made the success of the Protocol possible.

Before the ratification of the Nagoya Protocol, sectoral laws governed access to genetic resources and benefit-sharing in the cases where national laws did not cover ABS. There was no legal framework pertaining to access to the country's genetic resources and associated traditional knowledge. With support of the UNDP-GEF Global ABS Project, Sudan developed national ABS legislation that is currently in the process of being approved. Despite challenges due to the political circumstances, there is notable tremendous public support

for ABS which is strongly motivating the approval of the legislation. The law under consideration aims to provide measures for access to genetic resources and associated traditional knowledge and to guarantee a fair and equitable sharing of the benefits arising from their utilization to contribute to the conservation of biological diversity and the sustainable utilization of its components, in accordance with Sudan's obligations under the provisions of the Nagoya Protocol.

A national expert led the drafting process of the national ABS law with assistance of an international expert. A wide spectrum of stakeholders including representatives of key sectoral ministries, legal advisors, private-sector representatives, indigenous people and local communities and NGOs fully and effectively participated in the drafting process. The involvement of the decision makers from the beginning throughout the drafting process of the legal framework contributed significantly to the finalization of the national ABS legislation.

Consultation workshops were conducted with key stakeholders to review sectoral laws and their compatibility with the Nagoya Protocol, and to identify implementation gaps and opportunities. It was a lengthy legislative process. Multiple activities on awareness raising and strengthening of the capacities of different stakeholders on the Nagoya Protocol took place in parallel with the development of the law.

The provisions of the law applied to utilization of genetic resources and associated traditional knowledge and benefits arising from their utilization. The law excludes human genetic resources and the plant genetic resources for food and agriculture as listed in Annex 1 of the ITPGRFA. The provisions of the law apply to any use of genetic resources outside of those exclusions, but do not apply to exchanges of genetic resources among local communities in line with their customs and traditions.

The law defines the national institutional arrangement for implementation of the Nagoya Protocol including National Focal Point (NFP), Competent National Authority (CNA) and checkpoints and their functions. Provisions cover establishing requirements for access to genetic

resources and associated traditional knowledge, application procedures for that access, obtaining PIC, establishing MAT and defining monetary and non-monetary benefits.

The generous support of the Global ABS Project helped Sudan translate the Nagoya Protocol into national legislation and administrative procedures. The main Project outcomes include:

- drafting the national law on ABS and its regulations
- developing guidelines for traditional knowledge inventory
- a socio-economical study in the context of ABS to assist the country to foster biodiscovery partnerships in support of implementation of ABS pilot cases
- developing a national biodiscovery strategy for initiating research and biodiscovery partnerships and engaging private sectors in ABS-compliant value chains
- strengthening inter-sectoral coordination on ABS
- clusters of activities on awareness and capacity building in particular with respect to the negotiation of MAT resulting in well-qualified and motivated human resources for ABS management
- inventory of ABS measures registered with ABS CHM
- developing four BCPs.

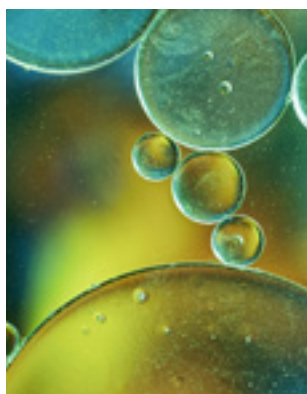
For the effective implementation of the Nagoya Protocol while approval of the national law is pending, a national interim committee was established at the Higher Council for Environment and Natural Resources by a ministerial decree to serve as CNA. This interim committee is mandated to receive requests and issue permits for access to genetic resources and associated traditional knowledge. The CNA follows African Union guidelines on ABS in that obtaining PIC and establishing MAT are prerequisites for an access permit. The period for granting the access permit depends on completion of the requested information but may not exceed one month. To comply with the Nagoya Protocol, access procedures are posted at the ABS CHM. When all conditions are met, the CNA issues the permit and submits a copy to the ABS CHM.



Leaves, flowers and pods of a senna plant



Senna has been prioritized as a case study among other biological resources for its diverse ABS-linked possibilities ...



Strategies for ABS partnerships for bioprospecting for senna and isolating extracts from it have been established ...



Senna ABS biodiversity pilot case

Senna, derived from species of the genus *Senna* in the Fabaceae family, has diverse socio-economical and market potential as a source of components for pharmaceuticals and cosmetics in Sudan. Senna has been prioritized as a case study among other biological resources for its diverse ABS-linked possibilities and for the presence of a local factory that had already entered into contractual agreement with the National Centre of Research (NCR) to utilize the traditional knowledge-based research and development (R&D) results for commercial production of a consumer-oriented cosmetic product.

A socio-economic study was implemented to optimize the local socio-economic impacts of a senna value chain in the context of the Nagoya Protocol. Strategies for ABS partnerships for bioprospecting for senna and isolating extracts from it have been established (with one instance of MAT established and two under negotiation). In preparation for the study and strategy development, a consultative workshop was organized by an international consultant during which chosen methodologies were illustrated and adapted. Another preparative step involved the participation of representatives from the Sudanese ABS team in an ABS-focused business dialogue held in Geneva in 2018, which helped to identify partners and gain exposure to international business models. It was an opportunity for the Sudan team to build their capacities and to gain relevant knowledge on how the international market is functioning and exploring its shape, whether a Business to Business (B2B) or a Business to Consumer (B2C) market, and its requirements. During this show a dialogue was initiated with some potential partners and this dialogue was facilitated by the international consultant of the Sudan – Global ABS Project. This exposure and face-to-face dialogue created a state of trust and facilitated a subsequent negotiation and establishment of MAT. The B2B market within which senna ingredients will be utilized is highly competitive. Sudan needs to differentiate its R&D results to keep its competitiveness. Achieving a mutually beneficial and workable ABS agreement requires critical levels of knowledge about targeted genetic resources and a well-trained team of experts with skilled negotiation capacities to identify and negotiate benefit-sharing terms.

Unlike negotiations for commercial and commodity contracts, negotiations for ABS contracts anticipate benefits from predicted outcomes of R&D, which can be different from the accessed materials themselves. The ABS contract governs ownership and utilization of products derived from genetic resources and regulates their transfer to third parties by ensuring traceability of the materials and benefit-sharing of monetary and non-monetary benefits. Lessons from the full scope of the development and implementation of the Sudan ABS pilot cases have positioned the Sudan ABS team and the relevant stakeholders to unlock potential values of other medicinal and aromatic plants in Sudan that may have marketable and industrial potentials.



EYEWITNESS STATEMENTS



The senna plant has been selected as a model for studying socio-economic impacts of an ABS-compliant value chain and establishing biodiversity partnerships.



"Stemming from our accumulated experiences in research on medicinal and aromatic plants for development of value-added products, the effective promotion for utilization of these research results requires involvement and participation of the private sector. We have previous examples of engaging with the private sector in cooperative research where the relationship lasts only until shortly after the end of research results. Soon after understanding the Nagoya Protocol, we realized that certain incentives and an enabling environment are required for building sustainable relationships benefiting both partners and maximizing socio-economic impacts of the relationship. As an eyewitness I would say that these conditions can be fulfilled if the ABS regime on the Nagoya Protocol (an ABS-compliant partnership) is applied. The NCR has been selected as one of the four pilot cases for establishment of ABS-compliant partnerships in Sudan. The senna plant has been selected as a model for studying socio-economic impacts of an ABS-compliant value chain and establishing biodiversity partnerships. NCR acknowledges receiving seed funding from the UNDP-GEF Global ABS project, which supported some R&D activities on the senna plant (extraction and chemical characterization of ingredients). This funding opened-up other positive and short-term outcomes including establishing memoranda of understanding with local partners and building infrastructure for R&D that will enable valorization of other genetic resources. The NCR is now poised to scale up this model for use with other plants."

DR MAGDA ABUBAKER OSMAN, Professor in Medicinal and Aromatic Plants, Agro-techniques and Utilization, National Centre of Research

"I am an herbalist and a traditional healer. Before the Nagoya Protocol, we used to provide genetic resources and associated traditional knowledge to researchers and others almost for free. My understanding of the Nagoya Protocol and ABS issues began with the implementation of the Global ABS Project in Sudan, serving as a representative of a local community of custodians of biologically active plants. My perception towards the value of our traditional knowledge was improved. The negotiated benefits arising from senna utilization opened our eyes about the values and benefits that can be drawn from traditional knowledge. This improved knowledge and understanding helped us to better value this wealth of traditional knowledge we hold. Herbalists and local communities will benefit greatly from the experiences gained during our participation. Therefore, as a holder of a great deal of traditional knowledge about medicinal and aromatic plants, I very much acknowledge the Nagoya Protocol and ABS for protecting our traditional knowledge and enabling us to gain economic benefit from it."

ABD ELHAKEEM ABDEEN, Herbalist and Local Community Representative



Herbalists and local communities will benefit greatly from the experiences gained during our participation.





One of the outcomes of the Global ABS Project in Sudan is the development of four BCPs involving communities of:



pastoralists



herbalists



Gum Arabic
Producer's
Associations



Community
Forests



The BCPs cover the following aspects of access and use of genetic resources and associated traditional knowledge:



ecological



socio-
economic



religious



cultural



The communities emphasize the importance of protection of their genetic resources and associated traditional knowledge ...



IPLCs' capacities, Biocultural Community Protocols and SDGs impacts

The CBD recognized the customary use of biological resources by indigenous peoples and local communities, article 10(c), and it plays a key role in maintaining traditional knowledge, innovations and practices, as stated by article 8(j)). One of the outcomes of the Global ABS Project in Sudan is the development of four BCPs involving communities of pastoralists, herbalists, Gum Arabic Producer's Associations and Community Forests. A team of experts under the Global ABS Project approached the four communities to provide them with technical support for the development of their BCPs. Technical experts held several meetings with the communities to introduce the Nagoya Protocol, principles of ABS and goals and mechanisms of BCPs. As result of these meetings the BCPs were drafted by the communities. These BCPs will be subjected to more verification by the multiple stakeholders involved. Visits to the four communities are planned to officially launch the BCPs.

The BCPs cover the ecological, socio-economic, religious and cultural aspects of access and use of genetic resources and associated traditional knowledge. The communities describe their vision, organization and decision-making structures, the targeted genetic resources and associated traditional knowledge. The BCPs provide regulatory measures for ABS. The communities emphasize the importance of protection of their genetic resources and associated traditional knowledge, maintain their right to grant access to them to specific users under specified conditions, and claim their rights to benefit from them. The main feature of the BCPs is an agreement (MAT) among the communities and the users which covers many elements, among them, the challenges facing the local communities and the potential monetary and non-monetary benefits involved.

One of the key challenges facing the Global ABS Project in Sudan is building the capacities of IPLCs to implement ABS. Local communities were involved in all stages, including the Project inception workshops, through the drafting process of the BCPs, and in capacity-building activities on negotiation of MAT and awareness raising. As a result of such involvement, local communities

came to support the ABS activities, as they strongly believe that the ABS regime will consider that the benefits arising from use of their genetic resource and associated traditional knowledge will be shared fairly and equitably. Furthermore, guidelines on conducting an inventory of traditional knowledge were developed. Such an inventory can preclude people from outside the community from acquiring intellectual property rights over traditional knowledge. The BCPs empower communities to promote their traditional knowledge, control its uses and benefit from its commercial exploitation. These results are in line with article 8(j) of the CBD, that parties subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity, and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices.

These four BCPs have contributed significantly to SDG 15 (sustainable use and protection) and SDG 17 (specifically Target 17.9 on capacity building and empowerment). Capacity building and full involvement of IPLCs in the BCP development process empowers IPLCs to recognize their decision-making role for ABS issues. The BCPs will promote improvement of the livelihoods of the communities as they appreciate traditional knowledge can be economic wealth, and it plays a central role in the lives of individuals in the communities and in the conservation of the natural resources on their land.

From the perspective of Sudan's experience, for effective implementation of the Nagoya Protocol, the following efforts involving all stakeholders need to be continued:

- sharing of experience among parties to the BCPs through different mechanisms such as the ABS community
- building capacity and strengthening of human resources, with special focus on IPLCs, and institutional capacities
- raising awareness of all stakeholders on CBD, Nagoya Protocol, ABS concepts and the ABS CHM
- involving IPLCs and relevant stakeholders in the implementation process
- providing adequate financial resources to support the above.



... local communities strongly believe that the ABS regime will consider that the benefits arising from use of their genetic resource and associated traditional knowledge will be shared fairly and equitably.



The BCPs empower communities to promote their traditional knowledge, control its uses and benefit from its commercial exploitation.



SDG 15
Life on land



SDG 17
Partnerships for the goals

TARGET 17-9



**ENHANCE SDG
CAPACITY IN
DEVELOPING
COUNTRIES**





ASIA



Cambodia

India

Kazakhstan

Malaysia

Mongolia

Myanmar

Tajikistan

Viet Nam



KINGDOM OF Cambodia

ABS status and ancient practice
in using traditional knowledge
to access genetic resources

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*International Consultant, technical support
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for Cambodia*







SETTING THE SCENE



Cambodia possesses
6,149 species in the
major groups:



775

freshwater



582

marine



162

mammals



173

reptiles



601

birds



72

amphibians



671

invertebrates



3,113

plants



Cambodia is located in Southeast Asia and its territory consists of a mixture of low-lying plains, mountains, the Mekong Delta and the Gulf of Thailand. The country has a total land area of 181,035 km², a 443-km coastline along the Gulf of Thailand and a population estimated at over 16 million in 2018.

Cambodia is predominantly dependent on its rich biodiversity and other natural resources for its socio-economic development and for the population's food, livelihoods and well-being. Because of the country's specific geographical location and due to its long history and complicated topographical, ecological and social features, Cambodia is recognized as an important rich and diverse country in regards to genetic resources. According to its National Biodiversity Status Report 2016, Cambodia's current record of biodiversity in relation to the inventory lists of all species known is 6,149 species in the major groups: 1,357 aquatic species (775 in freshwater habitats and 582 in marine habitats, 26 of this total are found in both), 162 mammal species, 173 reptile species, 601 bird species, 72 amphibian species, 671 invertebrate species and 3,113 plant species. However, the Forestry Administration has conducted some of the most significant botanical surveys of Cambodia to date and a more accurate plant species list will be forthcoming that is potentially composed of 4,500 species, which many of it has not been yet taxonomically identified. In addition, under the Ministry of Health, the National Centre of Traditional Medicine has identified 763 plant species with uses as traditional medicine.

There are 24 indigenous groups in Cambodia who depend on plant genetic resources for foods, medicines and livelihoods. Using traditional knowledge, they access genetic resources and have produced local cultivars and land races. They have traditionally managed nearly 4 million ha of remote evergreen and dry deciduous forests.

National framework on ABS and associated traditional knowledge

Cambodia became a signatory to the UN CBD and ratified it on 9 February 1995. Cambodia has also voted in favour of the UN Declaration on the Rights of Indigenous Peoples. Cambodia ratified the Nagoya Protocol on 19 January 2015 and became party on 19 April 2015. By virtue of the adoption of the Nagoya Protocol and as one of the goals set out in Cambodia's National Biodiversity Strategic Action Plan in 2016, known as NBSAP-2016, Cambodia was obliged to meet the CBD's Aichi Biodiversity Target 16 *"By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation."*

In the years since the adoption of its initial NBSAP in 2002, Cambodia has noted progress in each of its 17 themes under which 81 strategic objectives and associated indicators were identified, as well as 98 priority actions. However, theme 15 of the NBSAP-2016 is the ABS concept, which is still a new topic for Cambodia and for which the country has no legislation yet developed. The Royal Government of Cambodia is aware of the issue and the formulation of a national policy has been a challenge both in terms of expertise on ABS issues and financial resources. With support from the UNDP-GEF ABS Project *"Developing a Comprehensive Framework for Practical Implementation of the Nagoya Protocol"*, the Royal Government of Cambodia is in the process of developing ABS legislation. Currently, the ABS framework is developed and the legal process is under elaboration.

With respect to future ABS legislation, the Royal Government of Cambodia has enacted legislative steps which are relevant to aspects of the ABS topic. Most importantly, the 1993 Cambodian Constitution guarantees the rights of indigenous people and states that *"all Cambodian citizens shall be equal before the law, enjoying the same rights, freedom and fulfilling the same obligations regardless of race, colour, sex, language, religious belief, political tendencies, birth origin, social status, wealth or other status."*

Other national legal instruments that contribute to an enabling environment for the development of an ABS legal framework include:

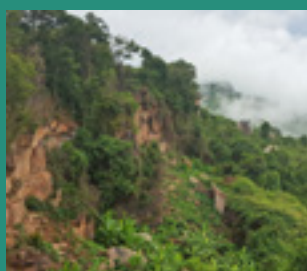
- The Law on Management of Pharmaceuticals (1996), which considers traditional medicine as pharmaceuticals. The Ministry of Health has competence to deliver the licenses for open pharmacy, procedures for production, import, export and trade of pharmaceuticals and the Sub-decree to regulate traditional medicine practitioners, with an aim to increase quality, safety and effectiveness. The Sub-decree set out criteria and procedures to control traditional health practitioners, who need to register with the Committee on Traditional Healers to obtain a license.
- Under the Protected Areas Law (2008), the Ministry of Environment (MoE) reserves the competence to monitor the inflow and outflow of plant seeds, wild species, crossbreeding of all types of wildlife and fish species in the protected areas whether with or without a commercial purpose. In addition, the law emphasizes that each protected area has to be protected and prevented from any negative or harmful activities which include inflowing or outflowing of destructive insect, plant or animal species of pandemic diseases. Furthermore, this law recognizes access to traditional uses, local customs, beliefs and religions of the local communities, and indigenous ethnic minority groups residing within and adjacent to the protected areas. The law has granted access to traditional uses of natural resources and customary practices of local communities and indigenous ethnic minority groups.
- The MoE is in the process of finalizing the Environment and Natural Resources Code, which also contains various provisions on benefit sharing that could be applicable to ABS. However, the process of integrating ABS provisions in the Code may take some time and the adoption of a temporary procedure is needed. While MoE is awaiting finalization of the national ABS legislation, the Ministry of Environment is initiating the development of a temporary procedure to grant permission for accessing genetic resources and sharing benefits from their utilization in the spirit of the Nagoya Protocol. In addition, Ministry of Environment and the National Council for Sustainable Development is in the process of developing the procedures for obtaining PIC and establishing MAT.



... The villagers used it (Proteal Thlouem Chhke) as traditional medicine ...



Cultivation involves a number of activities such as land preparation, planting, mulching and weeding.



... Traders regularly come to buy black ginger in the Kulen Mountain villages ...



From biotrade to a potential ABS case?

Black ginger (*Kaempferia parviflora*, Zingiberaceae) or Proteal Thlouem Chhke (Khmer common name) is less known than common ginger and has not been used widely among Cambodian people. Proteal Thlouem Chhke, as reported by an elderly woman who lives in Anlong Thom village (Kulen National Park), has been planted since her parent's generation at this village. The villagers used it as traditional medicine to regulate blood circulation, increase energy, strengthen body and power, stimulate nerves, serve as an aphrodisiac, treat high blood pressure, diabetes and heart disease and reduce triglycerides. Unfortunately, the chemical components and genetics of Proteal Thlouem Chhke have yet to be studied.

The Cambodian company, Bodia Cambodian Apothecary established in 2010, had produced a variety of natural products, but had no previous knowledge of black ginger. The company was invited to test black ginger tea production and to deliver training to the community in growing black ginger. In turn, villagers could be contracted by the company to supply black ginger for tea processing.

Cultivation involves a number of activities such as land preparation, planting, mulching and weeding. Harvest activities include digging of the rhizome, transportation if it is planted on farm, and removing adventitious roots from rhizome. Based on informants, neither chemical fertilizer nor pesticide is applied. Rhizomes can be harvested at the end of November-December or left in the ground until April if there is no precipitation. Hence, it takes seven to eight months from planting to harvesting. On average, cultivating 1 kg of rhizome costs 45,000 Riels (approximately US\$11), and takes 1.5 days of labour force for land preparation through post-harvest activities. Sixty-seven percent of black ginger production costs are for labour and 33% are for propagation rhizomes. On average, 1 kg of propagated rhizome yields 5 kg of product rhizome. Generally, farmers who cultivate black ginger annually preserve mother rhizomes to use as propagation material for the next harvesting season.

Traders regularly come to buy black ginger in the Kulen Mountain villages and then sell to vendors at different locations. The local traders usually sell black ginger to Khmer herbalists or traditional healers (Kru Khmer) or to vendors at the waterfall tourism site of Preah Ang Thom in Kulen Mountain National Park. A vendor obtains a five-times higher price if the black ginger is sold per piece. Black ginger has been sold in Phnom Penh as well. There are 13 Khmer herbal shops at the O. Russey Market and a few at the Praimpi Makara Market. Around 70% of shops offer black ginger in small amounts and are not well presented or visible to the buyers. Interest from outside Cambodia has led to volatility in the black ginger market. There was the case in 2018, when a trader from South Korea purchased black ginger in large quantities from vendors at Preah Ang Thom, which in a way stabilized markets of black ginger. However, it was only a one-time effect; the trader never returned with more demand and there was subsequently a sharp drop in price.



EYEWITNESS STATEMENTS

"In 2018, I was with the Biodiversity Based Products (BBP) team to conduct a Resource Assessment for Biodiversity Based Product Value Chains in and around Phnom Kulen National Park. And recently, I am so happy to return to Kulen Mountain National Park, where I found not only the members of the BBP, but also I met with other villagers who plant black ginger (Protea Thlouem Chhke) to fulfil the demand. The villagers in Kulen Mountain National Park do not depend only on the natural resources from the forest, instead they also cultivate black ginger by integrating it with their local vegetation."

DR SOPHEA CHHIN, PhD, Lecturer, Royal University of Phnom Penh

"My family has collected black ginger (Protea Thlouem Chhke) for many generations and I have now planted black ginger for sale. Before, we collected it from the forest, but now, we can cultivate it on our land. This knowledge was transmitted from generation to generation and I have learned from my parents and old villagers to cultivate different types of gingers. Black ginger is most in demand as it is used for brewing tea. I can only sell it to local tourists who come to Kulen Mountain National Park. Sometimes, one or two traders come to buy black ginger, but they don't come regularly. Therefore, it is difficult to cultivate black ginger for sale if there are no regular traders to buy it. We need to promote it to attract more traders."

MS PI, local member of the indigenous community of Thmar Chrounh village in Kulen Mountain National Park



Dr Sophea Chhin



Ms Pi

IPLCs' capacities, Biocultural Community Protocols

Traditional knowledge among IPLCs can be used to access genetic resources to heal all kinds of minor maladies which are key to human well-being. Many Kru Khmer (traditional healers) commonly use genetic resources to treat local and indigenous peoples. To regulate the Kru Khmer, the Ministry of Health established the National Centre of Traditional Medicine (NCTM) for training and certification. The NCTM provides five months of training with 35% basic medical sciences and 65% traditional Khmer medicine. After the participants complete the training course, they will receive accreditation from the Ministry of Health to legally practise and run their business. All participants must have had at least five years' experience as Kru Khmer and must pass the entry test. However, there are still many traditional healers who have not attended the training course and have not been certified to practise in their villages. Mrs Sokhon, a member of the Kru Khmer community from Kulen Mountain National Park noted that, *"traditionally, Cambodia's Kru Khmer learned from an older mentor, who has been practising healing arts."* She has been practising for more than 40 years and never received a formal education. However, for her children the situation has changed.



Traditional knowledge among IPLCs can be used to access genetic resources to heal all kinds of minor maladies ...



SDG 1
No poverty

TARGET 1-2



REDUCE POVERTY BY AT LEAST 50%



SDG 2
Zero hunger

TARGET 2-5



MAINTAIN THE GENETIC DIVERSITY IN FOOD PRODUCTION



SDG 15
Life on land

TARGET 15-6



PROMOTE ACCESS TO GENETIC RESOURCES AND FAIR SHARING OF THE BENEFITS

"The training has helped me to develop more skills not only in traditional medicine, but also in medical science. Moreover, the training has motivated me in conservation of biological resources and sustainable use of genetic resources. Before, we have followed unsustainable practices by cutting down trees while collecting medicinal plants. Now, we have been taught to use leaves or other parts, thereby helping to conserve the medicinal plants for long-term use."

MR CHAMROEUN, member of the Kru Khmer community who attended the Ministry's training course



Mr Chamroeun

The recognition of the contribution of relevant traditional and indigenous knowledge in relation to actions in support of genetic resources and their sustainable and equitable use goes beyond simple validation in the context of conventional science-based approaches. Traditional and indigenous knowledge related to genetic resources is central to identifying biodiversity status and trends and to developing realistic scenarios based on community participation with regard to the way the genetic resources are conserved and sustainably used. In this regard, the BCPs are important tools to support indigenous people and local communities and promote gender-sensitivity approach. IPLCs are custodians and owners of genetic resources and holders of traditional knowledge and, therefore, play a significant role in an ABS system. Furthermore, women are acknowledged as one of the key actors possessing and utilizing genetic resources and traditional knowledge.

SDGs impacts

The ongoing work of the Government on the Comprehensive Framework for Practical Implementation of the Nagoya Protocol considers the active roles of local stakeholders for a fair and equitable ABS process. This work also remains highly relevant to comply with the current Cambodian Sustainable Development Goals, to which the Royal Government of Cambodia has committed:

- SDG 1/target 1.2: by 2030, that all men and women, in particular the poor and vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance and natural resources
- SDG 2/target 2.5: by 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed
- SDG 15/target 15.6: promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.



MESSAGE FROM AN SDG ADVOCATE

"A country of rich culture and biodiversity, especially with a high level of genetic diversity, Cambodia has potential for promoting bioprospecting. Many plant and animal components have been used for traditional Khmer medicine by ancient people. According to the data from the Ministry of Health, at least 760 species are identified as medicinal plants, and most of them are associated with traditional knowledge that is practised by "Kru Khmer." The customary use of genetic resources associated with traditional knowledge for daily livelihood and disease treatment have existed since the Khmer Empire as shown in the Angkor Temples, especially in the Neak Pean Temple that was built in the second half of the 12th century by King Jayavarman VII to serve as a medicinal centre. This temple used the holy water and medicinal plants from Kulen Mountain to cure all illnesses. It is evidence that Cambodians lived in harmony with nature and depended on biodiversity resources for their daily livelihood and development.

"Cambodia has continued to this day the ancestral practices for curing common diseases by using medicinal plants and animals. Kru Khmer practices serve as the primary health care for communities living in remote areas that have difficulty accessing established health centers. Although modern medical services exist, Khmer traditional medicine and healing methods are still popular and functioning from generation to generation. The country's peace and political stability have provided an opportunity for bioprospecting innovation in Cambodia, utilizing and transforming Khmer Traditional Knowledge, resulting in nature-based solutions for biodiversity conservation and sustainable development.

"Aware of the value of traditional knowledge, the Royal Government of Cambodia is working with the UNDP-GEF ABS Project. This project has been designed to address and deal with the challenge of implementing ABS in Cambodia by analysing existing relevant legislation and policies as well as holding discussions for the development of new comprehensive legislation on ABS and associated traditional knowledge. The integration of PIC, MAT, research on indigenous knowledge and best practices for sustainable use of biological resources has been undertaken. The capacity for administrative measures for the implementation of the ABS legal framework is under development."

HE DR SOMALY CHAN, Undersecretary of State, Ministry of Environment



HE Dr Somaly Chan



Many plant and animal components have been used for traditional Khmer medicine by ancient people.



... customary use of genetic resources associated with traditional knowledge for daily livelihood and disease treatment have existed since the Khmer Empire ...



... peace and political stability have provided an opportunity for bioprospecting innovation ...



REPUBLIC OF India

Research and academic institutions
complying with ABS mechanisms
benefit local communities, conservation
efforts and corporations

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SETTING THE SCENE



India has a wide range of ecosystems and habitats such as:



forests



grasslands



wetlands



deserts



mountains



coastal and
marine



India is one of the 17 mega-diverse countries harbouring nearly 8% of the recorded species of the world, and representing 4 of the 34 globally identified biodiversity hotspots (Himalaya, Indo-Burma region, the Western Ghats and Sundaland) with a wide range of ecosystems and habitats such as forests, grasslands, wetlands, deserts, mountains and coastal and marine ecosystems. India is also a vast repository of traditional knowledge associated with biological resources. So far, over 100,000 species of animals and nearly 48,000 species of plants have been documented in the 10 biogeographic regions of the country as documented in India's 6th National Report to the CBD in 2018. Along with species richness, India also possesses high levels of endemism. Of the plant species, close to 10,000 are used for medicinal purposes. To conserve these medicinal species, 110 Medicinal Plant Conservation Areas have been established in India.

India is recognized as one of the eight Vavilovian centres of origin and diversity of crop plants, having more than 300 wild ancestors and close relatives of cultivated plants, which are still evolving under natural conditions. For India, conservation of biodiversity is crucial not only for the ecosystem services that biodiversity provides, which are necessary for human survival, but also because biodiversity is directly linked with providing livelihoods and improving socioeconomic conditions for millions of local people, thereby contributing to sustainable development and poverty alleviation. The main threats to biodiversity include overexploitation of natural resources, unsustainable use of biological resources, invasive alien species, land-use change, particularly urbanization, and impacts of climate change.



National framework on ABS and associated traditional knowledge

India became a signatory to the CBD in 1994, aiming at conserving biodiversity, its sustainable use and ensuring “fair and equitable sharing” of the benefits obtained through biological resources. India enacted the *Biological Diversity Act* in 2002 to implement the CBD with specific reference to its three core objectives. Thereafter, Biological Diversity Rules, 2004, were established to spell out procedures and mechanisms for the implementation of the 2002 Act.

India is also a signatory to the Nagoya Protocol since its entry into force on 12 October 2014 and has incorporated “*Guidelines on Access to Biological Resources and Associated Knowledge and Benefit Sharing Regulations, 2014*” under its 2002 *Biological Diversity Act*. These have further strengthened the enforcement of the Act in accordance with the provisions of the Protocol. The guidelines provide procedures to access biological resources and associated traditional knowledge for biosurvey purposes and for research and commercial utilization and provide the mode and option of benefit sharing on purchase or sale price of the biological resources so accessed.

These three instruments together prescribe a comprehensive mechanism of processing the applications for access to biological resources and associated traditional knowledge and provide a template and terms for benefit sharing. The Government has authority under the *Biological Diversity Act* to issue notifications as and when required to meet any exigencies for effective implementation of the ABS measures.

The 2002 Act is implemented through a three-tiered institutional mechanism: the National Biodiversity Authority (NBA) at the national level, State Biodiversity Boards (SBBs) at the provincial level, Biodiversity Councils at the Union Territories level and Biodiversity Management Committees (BMCs) at the local-body level. The NBA is a statutory body and performs regulatory, advisory and facilitative functions for the Government of India on issues of conservation, sustainable use of biological resources and fair and equitable sharing of benefits arising out of the use of biological resources. It was constituted in the year 2003. All the 28 states of India have constituted SBBs and six Union Territories have Biodiversity Councils.

The 2002 Act empowers the NBA and SBBs to grant approval for access to biological resources and associated knowledge as applicable. Participation of local communities in conservation and the ABS mechanism is ensured through BMCs. The Act envisages a specific role for the BMCs in the conservation of biological resources in their areas. These functions include preparation of the Peoples’ Biodiversity Registers (PBRs), maintenance and updating of registers, keeping records of access to biological resources from their local area, undertaking conservation planning and promoting sustainable use of biological diversity in their area. In accordance with the Act, the NBA and SBBs need to consult with BMCs in matters concerning access and benefit sharing. The Act empowers BMCs to collect levy fees from users of biological resources within their operational jurisdiction. As of the end of March 2021, India has constituted 273,451 BMCs across the country and prepared 248,156 PBRs.





A Traditional Knowledge Digital Library (TKDL) has also been created by the Government of India for transcribing ancient texts, aiming to prevent biopiracy of India's traditional medicinal knowledge anywhere in the world. It scientifically converts contents of ancient texts of Indian systems of medicines (Unani, Ayurveda, Siddha and Yoga systems) into five international languages (English, Japanese, French, German and Spanish) and has made this knowledge available to Patent Offices in several countries through memoranda of understanding. This has helped TKDL in setting aside, withdrawing or amending more than 230 patent applications based on *prior art* evidence present in the TKDL database.

NBA has approved 2,303 applications for ABS, of which 1,933 have been approved for filing Intellectual Property Rights, 30 have been approved for third party transfer for accession of biological resources and associated traditional knowledge, 29 have been approved for transferring the results of research to foreign nations, companies and Non-Resident Indians for commercial purposes and 311 have received approval for commercial utilization of biological resources and associated traditional knowledge.

The first IRCC was issued on 1 October 2015, following a permit made available to the ABS CHM by India. The permit was issued by NBA, the competent national authority under the Nagoya Protocol. India has the highest number of IRCCs (1,521) that provide

foreign researchers access to India's biodiversity. NBA has recently designed a single electronic permit system with support from GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) that makes it easy for users to apply for ABS permits and for multiple government authorities to review and approve applications, monitor compliance and report on the implementation of the Nagoya Protocol. It is a modular system that can be implemented in the context of existing research permit systems or as a self-standing system. It will serve as a cost-effective monitoring system for scientific publications, patents and products arising from research and development involving biological resources and associated traditional knowledge.

Under the UNDP-GEF Global ABS Project on the legal framework of ABS in India, capacities of academic and public-sector research institutions accessing biological resources were enhanced to better understand the legal provisions and guidelines related to ABS with nearly 700 researchers, scientists and law professors having been trained. A handbook on the legal provisions and guidelines for ABS has been prepared for public authorities and researchers and it includes an ethical code of conduct for researchers on use of biological resources and traditional knowledge and guidelines to develop a monitoring system for researchers to include due diligence. The Government of India has instituted the India Biodiversity Awards, with UNDP as a knowledge partner, to recognize successful cases of ABS.



A BIODISCOVERY CASE

Negotiating ABS agreements and learning about business models of industries that use genetic resources/traditional knowledge

M/s Sri Biotech Laboratories India Ltd, a small national company in the southern state of Telangana in India, (which was later taken over by a foreign company, Valagro Biosciences Ltd) deposited an advance payment of US\$45,000 into the National Biodiversity Fund for accessing biological resources for research purposes. This amount was later disbursed by NBA through the Telangana State Biodiversity Board, which shared benefits with the identified benefit claimants based on the geographical location from where the biological resources were collected.

The Company has been working towards improving the agricultural productivity through sustainable practices using the naturally existing biological resources and have set up a state-of-the-art R&D centre in Pashamylaram village, district Medak, Telangana. Biological resources such as rhizospheric soil, roots and stems and leaves from different crops such as paddy, pigeon pea, cotton, mango, turmeric and cabbage were collected from different villages across Telangana, Andhra Pradesh and Karnataka after obtaining six NBA approvals. The potentially most-efficient microbes were identified for development of microbial products like biopesticides, biofertilizers and microbial biostimulants which could be used for sustainable agriculture.

The local BMCs were also contacted during field sampling and the potential benefits likely to accrue to them at a later date were explained to them. An informal agreement was made with the villagers that once the products (that were expected to enhance plant growth in farmland for various crops) were commercialized, a part of the proceeds will be shared with the BMCs from whose jurisdiction the resources were collected. Meetings with the BMC members not only met the legal requirement for consultation, but also provided a venue for extending information about the provisions of the 2002 Biological Diversity Act to the public.

The Company developed two biostimulants and three commercially viable biofertilizers, entering into 11 agreements with the NBA between the period April and November 2018 for commercial utilization of these products. These agreements not only provide eco-friendly products to a larger section of the farmers thus promoting sustainable agriculture, but also serve to ensure continuous and progressive benefits to the benefit claimants over a long period by means of the royalties on its ex-factory sale of products as per regulation of the 2014 ABS Guidelines. The SBB advised the Company to create awareness among the general public on the importance of biodiversity conservation and its sustainable use, including benefit-sharing aspects common to the progressive Indian farmers, distributors and dealers in their national conferences. The SBB have also supported the BMCs to prepare their respective PBRs to ensure inconvenience-free transfer of benefits under the ABS mechanism.

The Company has been meticulous in following the law at different stages from accessing the biological resources to commercialization of products, while getting NBA approvals at every step, thus setting a precedent for similar applicants. Overall, the Company, in its early phase, has been able to capture the importance of biodiversity stewardship and is a good model for biotech industries to emulate as a proactive venture in village-industrial conservation initiatives. This story of ABS which started with Sri Biotech Laboratories India Ltd and was taken forward by Valagro Biosciences Limited is an excellent example of a complete ABS process from planning, access and processing to finally sharing of benefits with the resource providers. It demonstrates how a biological resource can be sustainably used within the ambit of law and be a win for both resource conservation and benefit accrual to local farmers.



EYEWITNESS STATEMENT



Dr V. B. Mathur

"The ABS mechanism provides an opportunity and has a huge potential in India for contributing to sustainable development. Fair and equitably shared benefits with the local communities for the biological resources under their jurisdiction and the associated traditional knowledge serve as an incentive to local communities for conserving and sustainably using the locally available resources. The Biodiversity Finance Initiative (BIOFIN) project in India has also identified this mandatory ABS mechanism as an innovative source of funding for conservation if it is implemented in its true spirit. The rich biological resources and associated traditional knowledge of India provide ample opportunities to industry and researchers to tap and add value for further development. The ABS mechanism provides a triple win situation for industry, local communities and conservation of biological resources. To further the benefits of ABS to the industry and ensure emulation of such examples, India is in the process of developing an incentive mechanism to ensure better compliance, promote environmentally responsible businesses and to help create awareness among the public regarding the ABS mechanism and its relevant compliance requirements."

DR VINOD B. MATHUR, Chairperson, National Biodiversity Authority, India



... the preparation of BCPs empowers local communities by enhancing their understanding of their rights and responsibilities in the context of biological resources and knowledge ...



Capacities of Local Communities, Biocultural Community Protocols and SDGs impacts

India is one of the pioneer nations in development of BCPs. To date, BCPs have been established in several states with the help of the national, state and local-level government institutions and technical support groups. The earlier BCPs in India were prepared under a national UNDP-GEF project entitled "Mainstreaming Conservation and Sustainable Use of Medicinal Plant Diversity in Three Indian States." These BCPs have annexed a model contract which provides a template to the local communities and enables them to negotiate an agreement with an external party who wishes to access their resources and knowledge. This ensures that the due process of consultation is followed by the external parties. The model contract provides a list of monetary and non-monetary benefits to choose from when entering a contract with an outside party. Three BCPs were prepared in Arunachal Pradesh, seven in Uttarakhand and three in Chhattisgarh in the years 2011 to 2013.

The BCPs include a section on international and national laws thereby sensitizing the local communities on matters such as ABS, Reducing Emissions from Deforestation and Forest Degradation (REDD), protected area frameworks and payment for ecosystem services schemes. Participatory Rural Appraisal exercises such as Focused Group Discussions with local men, women and youth, capacity assessments, need analysis, resource mapping, etc. are conducted to collect information and serve as a platform to raise awareness. Thus, the preparation of BCPs empowers local communities by enhancing their understanding of their rights and responsibilities in the context of biological resources and knowledge in the formal laws and capacitates them to help the government in monitoring access to biological resources.

The SBB of Uttarakhand considers a BCP as an important part of the regulatory process and has accorded it a legal status by linking it to the PBRs and including it in the State Biodiversity Rules. During the national UNDP-GEF project, the Monpa community in western Arunachal Pradesh used the BCP to interact with the Drokpas community in the neighbouring country, Bhutan, and to discuss ways of protecting their common knowledge and practices related to shared biological resources. The BCP prepared for the Apatani community in the Niti Village of the Ziro Valley in Arunachal Pradesh has included the *Nikung Dapo* (a document consisting of all customary laws of the Apatanis) in the BCP which has been annexed to the PBR, thus giving it recognition.

The BCPs include a mechanism for contributing to several SDGs in India that provides for creating effective policy framework to eradicate poverty (SDG 1.b), combating hunger by maintaining genetic diversity and improving access food (SDG 2.5), facilitating research and development for public health and technological innovation (SDG 3.b), promoting gender equality for education and development (SDGs 4.7 and 5), making cities and human settlements inclusive, resilient and sustainable with access to basic necessities (SDG 11), ensuring sustainable consumption and production patterns (SDG 12), promoting fair and equitable sharing of benefits arising from utilization of genetic resources and access to such resources (SDGs 15.6, 15.a, 15.b), mobilizing resources and developing partnerships to support national targets and implement (SDGs 17.6 and 17.9).



MESSAGE FROM AN SDG ADVOCATE

"Sustainable use of biological resources contributes to the achievement of the Sustainable Development Goals. The ABS concept ensures fair and equitable sharing of benefits by industry and research institutions with local communities, for use of genetic material taken from biological resources including plants and animals that are protected by these communities. These benefits empower people to conserve their local biodiversity through monetary incentives and non-monetary support like capacity building and small infrastructure. Success of ABS models reflects effective collaborations among communities, industry, researchers and policymakers. I am pleased that under the UNDP-GEF Global ABS Project, India has created a cadre of master trainers and developed training modules with national law universities and scientific institutions across the country for effective implementation of ABS."

MS SHOKO NODA, Resident Representative, UNDP India



SDG 1
No poverty



SDG 2
Zero hunger



SDG 3
Good health and well-being



SDG 4
Quality Education



SDG 5
Gender equality



SDG 11
Sustainable cities and communities



SDG 12
Responsible consumption and production



SDG 15
Life on land



SDG 17
Partnerships for the goals



Ms Shoko Noda



Sustainable use of biological resources contributes to the achievement of the Sustainable Development Goals.





REPUBLIC OF Kazakhstan

Adding value to a native
genetic resource for commercialization
in accord with the ABS principles
of the Nagoya Protocol

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SETTING THE SCENE



Kazakhstan is endowed with an enormous diversity of mountain ecological systems and a great diversity of species.



... species of the dandelion genus *Taraxacum*, Asteraceae, is an efficient latex producer and is one of the rare plant species facing a risk of extinction in Kazakhstan ...



The Republic of Kazakhstan is located at the heart of Eurasia. Its total area is 2.72 million km², its greatest distance from north to south is 1,600 km, and from west to east is 3,000 km. Kazakhstan is endowed with an enormous diversity of mountain ecological systems and a great diversity of species. The country is mainly known for its very high mushroom endemism rate; more than 120 of its over 5,000 species of mushrooms are endemic. Kazakhstan is also known for its vibrant fossil flora and fauna, some of which are among the oldest and date back to about 420 million years. More than 5% of the country's land surface has a protected area designation. Kazakhstan's biodiversity is always under threat from habitat destruction due to urbanization and mineral resources extraction, poaching, hunting, pollution and unsustainable agricultural practices. Rare hoofed-animal populations, and many other species, have continued to decrease despite improved protection practices.

The flora of agricultural biodiversity is represented by 226 species of wild crop relatives that determine the genetic potential of 24 crops. Valuable plant genetic resources include ten species of currant, wild relatives of carrots, purslane, asparagus, onions and garlic and 120 species of tulips, according to a 2013 study by B. Sh. Alimgazinova and M. A. Yessimbekova in the Russian Journal of Genetics: Applied Research. A gene pool of global significance for fruits includes Sievers and Nedzvetski apples, apricots, and others. More than 70 varieties of field crops, 68 varieties of fruits, more than 60 varieties of vegetable and melon crops and more than 20 varieties of potatoes are bred and well adapted in the country. Among other things, the UNDP-GEF Global ABS Project facilitates and supports bioprospecting research on genetic resources that come from the following key plant species: *Rhaponticum carbamides*, Asteraceae, *Rhodiola rosea*, Crassulaceae, *Ferula assafoetida*, Apiaceae and species of *Cistanche*, Orobanchaceae. The Global ABS Project has also paid attention to species of the dandelion genus *Taraxacum*, Asteraceae. Dandelion is an efficient latex producer with the same qualities as the latex from *Hevea brasiliensis*, Euphorbiaceae. Dandelion is one of the rare plant species facing a risk of extinction in Kazakhstan due to human interferences because the extraction of natural latex from the plant has been continuing over decades.



National framework on ABS and associated traditional knowledge

Kazakhstan has made significant progress since it became a contracting party to the CBD in 1997 by taking policy and legislative steps towards promoting conservation and sustainable utilization of wild species, biological resources and associated traditional knowledge while also supporting the fair and equitable sharing of benefits arising from the use of those resources, namely through its National Biodiversity and Strategic Action Plan and Environmental Code of 2007. In this context, Kazakhstan attributed great importance to the Nagoya Protocol on ABS and ratified it in 2015.

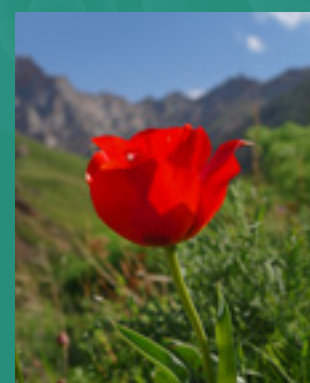
The Inspectorate of the Protected Areas under the Committee of Forestry and Wildlife has been issuing bioprospecting permits since the coming into effect of the *Bioprospecting, Access and Benefit Sharing Regulations* of 2015 (BSAP regulations), which were developed following the Environmental Code of 2007. The BSAP regulations manage bioprospecting activities through a permit system. The Global ABS Project supported the upgrade of the existing legislative framework for ABS to comply with the Nagoya Protocol's new obligations. All the legal and policy regulations have been harmonized to make the respective legal and policy documents more compliant with the ABS rules to fulfill the country's obligations under the Nagoya Protocol. Moreover, the ABS legal mainstreaming activities being pursued by the Global ABS Project facilitated the implementation of the Nagoya Protocol in the country by enhancing legal certainty and transparency on procedures for access and benefit-sharing, and for monitoring the utilization of genetic resources along the value chain, including through internationally recognized certificates of compliance.



More than 70 varieties of field crops are bred and well adapted in the country.



A gene pool of global significance for fruits includes Sievers and Nedzvetski apples, apricots, and others.



Valuable plant genetic resources include 120 species of tulips.



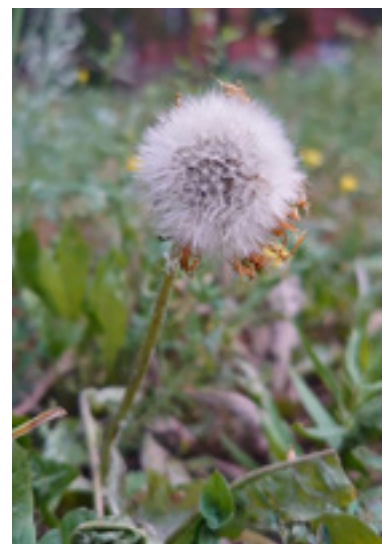
A BIODISCOVERY CASE

“Rubber community” is a community-based organization that has undertaken rubber production from *Taraxacum kok-saghz*, the dandelion species native to Kazakhstan, Kyrgyzstan and Uzbekistan. The community is also acknowledged for its fundamental role as a holder of traditional knowledge on genetic resource-based product discovery and innovation as well as for its efforts towards biodiversity conservation and sustainable marketing. In 2018, with the support of the Institute of Botany and Phytointroduction of the Committee of Forestry and Wildlife under the Ministry of Ecology, Geology, and Natural Resources, the community signed a benefit-sharing agreement with The Bassiouni Group (TBG) based in New York City, USA. The company is a global development firm that provides advisory and trade and investment solutions for governments, international institutions, corporations, small and medium enterprises and communities globally, focusing on the emerging market. Kazakh Invest is a private equity firm that provides a bridge between overseas capital and regional opportunities. Kazakh Invest offers a full range of services to support investment projects from idea to implementation on the principle of “one-stop-shop” and acts as the Unified Coordination Centre for Special Economic Zones of the Republic of Kazakhstan. The Rubber community, jointly with the local communities from the Almaty region of the Kazakhstan company, established a break-through project in Kazakhstan to develop full-cycle production of natural rubber from dandelion plants. This ABS contractual prospective was the second benefit-sharing agreement involving PIC from local communities in Central Asian countries for using commercial principles of ABS mechanisms.

The Rubber community and its partners are currently concentrated on cropping activities by mobilizing commercial contracts using PIC and MAT. In close cooperation with the other local organizations, the Rubber community has established 5,000 ha of land in the suburbs of Almaty city to produce dandelion following the commercial agreements. Presently, the Rubber community is undertaking another contract with rubber companies in the Netherlands and Germany. Once PIC and MAT are successfully obtained, the company plans to expand its land resources up to 800,000 ha by 2028 by using land resources of Almaty subregions. Overall, the community expects to increase its commercial production of dandelion up to 550 tonnes per year. The rubber community will sell all naturally produced rubber at the market price in both national and international markets. Kazakhstan annually consumes more than 39 tonnes of rubber, while the total EU consumption in 2019 was only 11.97 tonnes of natural rubber.

It is estimated that there will be a natural rubber supply deficit from 2023 and on, increasing to an annual deficit of rubber to 780 kt in 2030. Alternative scenarios could see a surplus of 237 kt and an ever-larger deficit of around 1,910 kt in that same year. An International Rubber Study Group report anticipates a deficiency in all scenarios in the year 2025, varying between 44 and 119 kt. While the Rubber community is presently focused on natural rubber, the company is ambitious and has the potential to expand production to other critical products that can be obtained from dandelion, such as inulin and components for bioplastics and biofuels. A syrup derived from dandelion, a fructan (a polymer of fructose molecules), can be used to fortify food with dietary fibre or replace sugar and fat. Inulin can be added to various foods, including bread, to increase fibre and digestive benefits. It can also replace the sugar that is otherwise added to foods, including cookies, cakes, brownies, pies, dairy products (milk, yogurt and cheese) and dietary supplements.

Inulin is also used in instant drinks and flavoured waters, as well as in confections like gum and ice cream. In addition to being the source for the syrup used in nutrition and medicinal products, inulin, when dehydrated, produces hydroxymethylfurfural (HMF). This yellow-brown powder can be used in generative plastic production. Presently, the plastic output's favoured process is through a natural oil byproduct, polyethylene terephthalate (PET), also known as polyester, which can take a hundred years to decompose; thus, such production is not sustainable. Today, there is the possibility of replacing the "T" in PET with the "F" from HMF to make polyethylene furanoate (PEF) bioplastic, which is a compostable material. Therefore, there is the potential for taking the inulin from dandelion to use as a construction block to generate bioplastics, which can then be utilized to produce eco-friendly bioplastic products and packages sustainably. Once the rubber and inulin are extracted from dandelion, the plant residue can also be used to produce biofuels for use within the renewable energy market.



Dandelion in fruit



"In 2019, the worldwide production of natural rubber reached 12.3 tonnes, and the world rubber demands are anticipated to require up to 21 million ha of dandelion plantations by 2024. However, many environmental issues resulted due to irrational rubber production from loss of biodiversity and deforestation due to the use and exposure to heavy chemicals during harvesting and production."

DR GULNARA SITPAYEVA, Director, Institute of Botany and Phytointroduction, Committee of Forestry and Wildlife, Ministry of Ecology, Geology and Natural Resources

"Dandelion is a pesky plant native to Kazakhstan that can replace rubber in over 30,000 products and be a source of inulin that can be used in confectionery products. The Kazakhstan Rubber community is working with partners in Germany and Netherlands to raise capital for the growth and harvesting of dandelion as well as for the production of a suite of commodities using both the rubber and natural inulin that is produced from the dandelions."

MR FIRUZ IBROHIMOV, Programme coordinator, UNDP Kazakhstan



EYEWITNESS STATEMENTS



Mr Firuz Ibrohimov



SDGs implemented by the biodiscovery case

The production of dandelion as a crop and source of extracts and chemicals can contribute to the implementation of the following SDGs for Kazakhstan:

- SDG 1 (Target 1.2). Increases would benefit the incomes of 301 farmers (109 male and 192 female) from 15 to 61% due to having their land productivity increased growing dandelion for commercial purposes in the rubber production sector. Cultivation of high-value genetic resources such as dandelion would also have other environmental sustainability benefits.
- SDG 1 (Target 1.3). Access to economic resources would be facilitated for the poor and vulnerable (especially previously displaced people, especially female-headed households) through job creation involving sustainably managed genetic resources. Throughout the Almaty districts, with a total of restored dandelion plantations of 5,000 ha, jobs were created for 78 households of seasonal workers who come from neighbouring regions, 29 permanent residents and 19 residents (mostly women).
- SDG 3 (Target 3.9) The well-being and health of the population in Kazakhstan as well as of people abroad could be improved due to full rubber and inulin production from dandelion for use in the transport, retail and medical industries.
- SDG 15 (Target 15.1). Conservation, restoration and sustainable use of dryland ecosystems could be enhanced, covering over 800,000 ha.

The Rubber community is a uniquely positioned organization that deals with natural rubber production on a large scale in Kazakhstan. Kazakhstan is one of the countries to which dandelion is native and it possesses extensive land areas on which native dandelions are growing. Nikolai Ivanovich Vavilov, a prominent Russian and Soviet agronomist, botanist and geneticist, best known for having identified the centres of origin of cultivated plants, noted in the early 20th century that Kazakhstan is a centre of natural rubber of high quality and of wild natural genetic resources. Furthermore, Kazakhstan's strategic Eurasian location will enable the community to benefit from existing logistical and infrastructure networks connecting to Europe and Asia. Since 2018, the Rubber community has engaged about 1,200 seasonal workers, of whom 47% have been women.



SDG 1
No poverty

TARGET 1-2



REDUCE POVERTY BY AT LEAST 50%

TARGET 1-3



IMPLEMENT SOCIAL PROTECTION SYSTEMS



SDG 3
Good health and well-being

TARGET 3-9



REDUCE ILLNESSES AND DEATH FROM HAZARDOUS CHEMICALS AND POLLUTION



SDG 15
Life on land

TARGET 15-1



CONSERVE AND RESTORE TERRESTRIAL AND FRESHWATER ECOSYSTEMS



MESSAGE FROM AN SDG ADVOCATE

"Harmonization and comprehension of the national legal and policy documents, including establishing a clearing house mechanism, was essential to ensure transparency of the national ABS programme in Kazakhstan that sets open windows for traditional knowledge holders to earn and mobilize additional resources for conservation of those unique genetic resources.

"Partnership and collaboration between traditional knowledge holders, the scientific community, research institutions and small and medium entrepreneurs are critical for successfully incorporating ABS principles. The development of national legislation on ABS, with the full and active participation of key stakeholders, is instrumental in facilitating access, ensuring that PIC is obtained, leading to negotiations and entering into MAT. Clearly defined holders of traditional knowledge coupled with legal representation, are key to many successful benefits sharing agreements or ABS projects.

"Key to the Global ABS Project is the full mainstreaming of the ABS principles into the national legal and policy instructions, including ensuring that the cultivation of Kazakhstan indigenous genetic and biological resources reduces pressures on wild species, thereby promoting their conservation and sustainable use. The cultivation site and processing facility for high-quality extracts that is supported by the Global ABS Project are located in a rural area, where there is a moderate level of unemployment; hence the Global ABS Project also aims to create new jobs at the community level in the cultivation sites as well as in the processing facility."

DR KURALAY KARIBAYEVA, Director, Institute of Ecology and Sustainable Development
(Project partner)



Dr Kuralay Karibayeva



Clearly defined holders of traditional knowledge coupled with legal representation, are key to many successful benefits sharing agreements or ABS projects.



... ensuring that the cultivation of Kazakhstan indigenous genetic and biological resources reduces pressures on wild species, thereby promoting their conservation and sustainable use





Malaysia

Strengthening the National
ABS Framework and delivering
environmental, social and economic
benefits through the anti-microbial and
anti-inflammatory properties
of *Litsea cubeba*

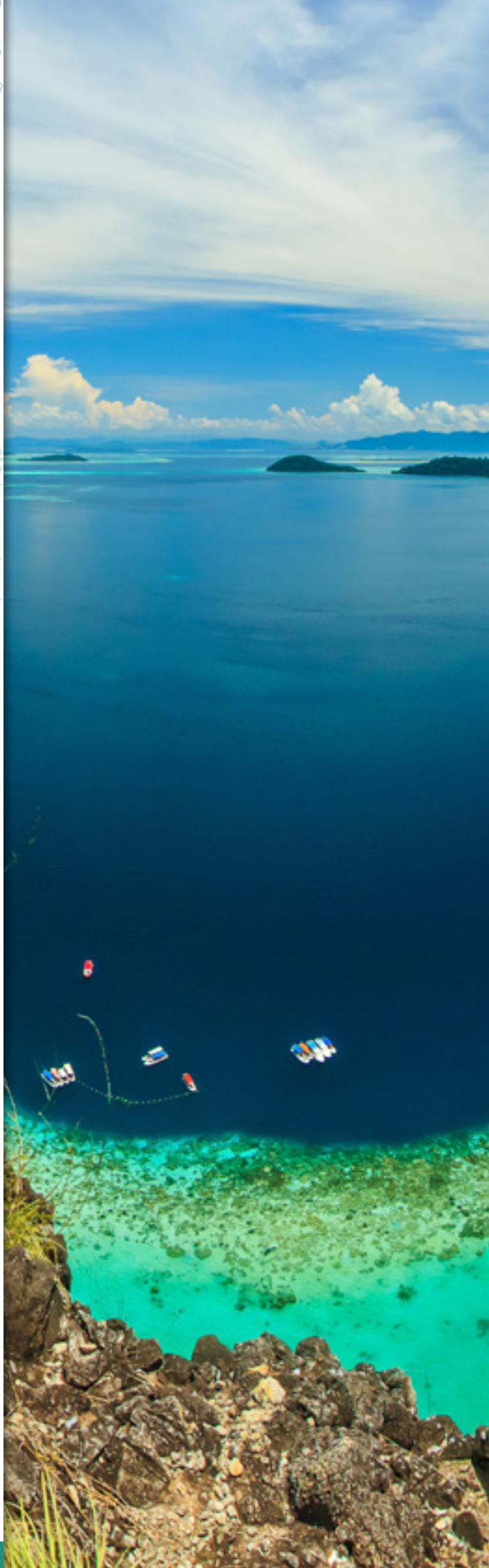
Authors

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Margarita Naming

Sarawak Biodiversity Centre







SETTING THE SCENE

A megadiverse
country



Malaysia possesses
a wide array of
ecosystems ...



Malaysia's most recent,
reported species:



15,000

vascular
plants



306

mammals



742

birds



242

amphibians



567

reptiles



449

freshwater fish



1,619

marine fish



150,000

invertebrates



Malaysia – one of the twelve mega-biodiverse countries in the world – belongs to the Sundaland biogeographical region, which comprises the Malay Peninsula and the Malay Archipelagic Islands, including Sumatra, Java and Borneo, and possesses a wide array of coastal, marine and terrestrial ecosystems. The Sundaland region is further divided into several terrestrial and marine ecoregions, which include the Peninsular Malaysian, Borneo lowland and Borneo montane forests, the Sulu-Sulawesi marine ecoregion, and the Andaman Sea. Malaysia is also home to 18 ethnic subgroups of *Orang Asli* in Peninsular Malaysia and 64 indigenous groups of *Orang Asal* in Borneo's Sabah and Sarawak. This ethnic and cultural human diversity is the source of a vast variety of traditional knowledge about Malaysian ecosystems.

Malaysia's 6th National Report to the CBD in December 2019, its most recent, reported an estimated 15,000 species of vascular plants, 306 species of mammals, 742 species of birds, 242 species of amphibians, 567 species of reptiles, over 449 species of freshwater fish, over 1,619 species of marine fish and more than 150,000 species of invertebrates. Some of the iconic species include Malayan tiger, Malayan tapir, Asian elephant, Orang utan, Sunda pangolin and Sunda clouded leopard. The Borneo states of Sabah and Sarawak host the richest rainforests in the world with a high diversity of Dipterocarps, comprising 291 species or 75% of the family. With a total coastline of 8,840 km and 879 islands, Malaysian waters are home to approximately 4,006 km² of coral reefs, and host more than 77% of the world's known coral species.



National framework on ABS and associated traditional knowledge

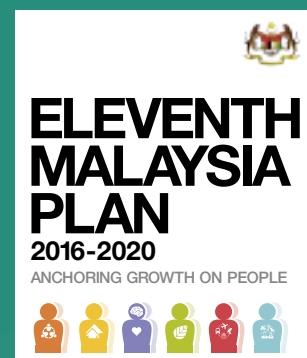
Malaysia pledged to maintain at least 50% of its land under forest and tree cover during the Rio Summit in 1992. To meet global and national targets and aspirations to conserve this rich natural endowment, Malaysia has become a party to various international environmental instruments related to biodiversity including the Nagoya Protocol (2019). “Green growth/economy” is recognized as an important development strategy under the most recent 5-year Malaysia Plans – Eleventh Malaysia Plan 2016–2020 and Twelfth Malaysia Plan 2021–2025. The strategy emphasizes strengthening an enabling environment for green growth, adoption of sustainable consumption and production, conserving natural resources and strengthening resilience against climate change and natural disasters. These actions are expected to conserve biodiversity and safeguard its traditional knowledge holders and beneficiaries.

On 9 October 2017, the “Access to Biological Resources and Benefit-Sharing Act 2017” (Act 795) was enacted in Malaysia following the Royal Assent and reading by the Parliament. This is a landmark law that protects and safeguards indigenous peoples’ rights of their traditional knowledge through prior informed consent, ensures benefit-sharing agreements with the resource provider for commercial uses and curbs biopiracy – stealing of biological resources without the consent of the country of origin. The law regulates the access to genetic or biological resources and traditional knowledge of indigenous peoples, known as *Orang Asli* or *Orang Asal* in Malaysia, associated with these resources and benefit-sharing arising from their utilization.

The process of formulating a national policy and regulatory framework in Malaysia started as early as 2008, drawing lessons and feedback from existing subnational legislation in the states of Sabah and Sarawak on bioprospecting and traditional knowledge. More than 20 participatory consultations were held with subnational governments, academia, research institutions, civil society and non-governmental organizations, private businesses involved in bioprospecting and biotechnology, indigenous peoples and local communities to create awareness and understanding as well as getting feedback and views on the legal framework. The pilot projects executed by the Forest Research Institute Malaysia, Sarawak Biodiversity Centre and Sabah Biodiversity Centre with the support from the UNDP-GEF Project ‘Developing and Implementing National Access and Benefit-Sharing Framework in Malaysia’ implemented by the Ministry of Energy and Natural Resources, demonstrated the principles and application of PIC for access to biological resources and MAT for fair and equitable sharing of benefits. The knowledge exchange among ABS practitioners in Malaysia, India and Bhutan during technical missions to these countries in 2012–2014 was particularly beneficial to the drafting of legal provisions to incorporate best practices and to address current and potential issues during the enforcement of the new law. The draft law was also uploaded onto the website of the Ministry of Energy and Natural Resources twice, in 2012 and 2015, for public notification, feedback and comments.



“Green growth/economy” is recognized as an important development strategy under the most recent 5-year Malaysia Plans ...



The strategy emphasizes strengthening an enabling environment for green growth, adoption of sustainable consumption and production, conserving natural resources and strengthening resilience against climate change and natural disasters.



The law regulates the access to genetic or biological resources and traditional knowledge of indigenous peoples ...





The federal government plays a coordinating role, as well as providing the link to international enforcement when a resource illegally taken from the state is developed and patented elsewhere.



“The bill was a long time in the making. Essentially because our constituent states, which constitutionally have exclusive jurisdiction over land and its resources, were wary of the encroachment of federal authority over their rights. The matter was resolved with the jurisdiction to implement the law being vested entirely in states. The federal government plays a coordinating role, as well as providing the link to international enforcement when a resource illegally taken from the state is developed and patented elsewhere.”

PROFESSOR GURDIAL SINGH NIJAR, Prominent advocate and solicitor, founder of the Centre of Excellence for Biodiversity Law, University of Malaya and the main drafter of the ABS law in Malaysia, from his article *“Finally, A Law to Curb Piracy”* in The Sun Daily on 7 August 2017 about the key challenges in the legal drafting process



Key provisions of Act 795 include:

- Distribution of authority between Federal and State institutions through clear description of the functions of National Competent Authority and Competent Authorities
- Access to biological resources through requirements for PIC and permits for commercial and non-commercial purposes
- Benefit-sharing through MAT
- Application of benefits for biodiversity conservation
- Compliance and monitoring of domestic ABS requirements.

In November 2018, Act 795 (ABS law) paved the way for Malaysia to ratify the Nagoya Protocol, reaffirming the country's commitment to conserving its unique biodiversity while also promoting the sustainable use and equitable sharing of benefits. In February 2019, Malaysia's ratification came into force and has been supported by new national regulations and amended subnational legislation. National subsidiary regulations under Act 795 were finalized by the Attorney General's Chamber on 22 November 2019 and gazetted on 17 December 2020. These subsidiary regulations will be enforced together with the Act once all the implementation mechanisms are in place in 2021.



A BIODISCOVERY CASE

The LitSara® story – Enriching lives with a breakthrough innovation of traditional knowledge

In the serenity of the highlands of Sarawak, Malaysia has an enigmatic hold on those who set foot on its soil. From the cool mountain climate of the Lawas and Bario highlands in the north, to the remoteness of the Padawan range in the south, these areas are blessed with breath-taking views, peaceful remoteness and rich soil that leaves one with a feeling of calm and content.

Amidst these gentle hills and rolling valleys of this region are found the *Kelabit* villages of Pa'Ukat and Pa'Lungan in the Bario highlands, the *Lun Bawang* villages of Long Kerebangan and Long Telingan in the Lawas highlands and the *Bidayuh* community of Kampung Kiding in the Padawan range. These five villages share a common resource, the *Litsea cubeba* tree, which each community has long utilized for its culinary and healing properties. Through the Traditional Knowledge Documentation Programme, an activity implemented by the Sarawak Biodiversity Centre (SBC) since 2001, and the ABS Programme of the biological resources pilot demonstration project supported by the UNDP-GEF ABS Project in 2014, SBC partnered with these indigenous communities to jointly learn and develop innovative products from this exciting plant species.

Known to the *Bidayuh* as “pahkak” and to the *Kelabits* and *Orang Ulu* as “tenem”, the tree produces a scintillating scented essential oil that invigorates, rejuvenates and inspires. Laboratory tests have found that the essential oil derived from the *Litsea* trees in Sarawak differs from that of the same species found in China and other countries in the region. The essential oil shows anti-microbial and anti-inflammatory properties and is able to repel insects, which make it suitable as an active ingredient in personal care products. This potentially multipurpose oil derived from the fruits and leaves of the *Litsea* tree has led to intellectual property certifications – a geographical indication for the tree as “Sarawak Litsea” and a trademark for its essential oil “LitSara®”.

The LitSara® pilot initiative demonstrates the good spirit of ABS which utilizes PIC from participating communities, who, themselves, are actively involved in the project which including the *in-situ* conservation of the *Litsea cubeba* plant's natural habitat through sustainable harvesting using Good Wild Craft Practice. The initiative ensures that the valuable traditional knowledge is recognized and benefits, in both monetary and non-monetary ways, are appropriately shared.



LitSara® products



Propagation of tenem (*Litsea cubeba*) by *Kelabit* people from the Pa'Lungan village in the Bario highlands, Sarawak



... sharing of benefits with local indigenous communities allows them to improve their livelihood ...



SDG 1
No poverty



SDG 8
Decent work and economic growth



SDG 15
Life on land

IPLCs' capacities and SDGs impacts

The Sarawak Biodiversity Centre, on 19 April 2017, entered into a two-year agreement with Interhill Group, the owning company for both Pullman Kuching and Pullman Miri Waterfront Hotel for collaboration on the sale of LitSara® products. The collaboration is part of a corporate social responsibility initiative of Interhill and its hotels in giving back the proceeds from the sales of LitSara® products to the indigenous communities in Sarawak.

In 2019, SBC successfully signed ABS agreements (the first in Malaysia) with the five communities involved in *Litsea cubeba* oil production namely Pa'Ukat, Pa'Lungan, Long Kerebangan, Long Telinga and Kampung Kiding. The pilot initiative created a complete value chain: from biological resource (raw material) collection, through primary oil extraction, to secondary product processing for health and personal care products such as soap, essential oil, air freshener, etc. to marketing and sales. The sharing of benefits with local indigenous communities allows them to improve their livelihood and at the same time preserve their traditional knowledge while promoting the sustainable use of the biological resources. This initiative has been a practical demonstration of how an ABS biodiversity case contributes to SDG 1 (No poverty), SDG 8 (Decent work and economic growth) and SDG 15 (Life on land) for Malaysia.



Benefit sharing agreement signing with five communities



From left to right, Sah Lasung, Ken Mutang, Eriana Daniel (sitting in the middle), Linda Lagang and Laput Baru from Long Kerebangan community

"The project gave us new experience and additional income from the sale of LitSara essential oil. LitSara is regarded as a potentially high-value crop and is being sustainably cultivated by the communities. A sense of cooperation and collaboration through various activities were fostered among community members and when benefits obtained were shared equally by everyone. The project provided the opportunity for communities to share traditional knowledge and be recognized as the rightful owner in addition to enabling communities to reap benefits from the royalties."

KEN MUTANG, Lun Bawang participant in the LitSara® pilot initiative from Long Kerebangan village

"LitSara essential oils can be incorporated into products such as soap and shampoo to kill germs and remove odour. From my own experience, LitSara essential oil is great for healing toothache. Furthermore, LitSara's soap and shampoo is gentle on the skin and is able to reduce itchiness. The project has given us an opportunity to generate alternative sources of income."

LINDA LAGANG, Lun Bawang participant in the LitSara® pilot initiative from Long Kerebangan village



EYEWITNESS STATEMENTS



LitSara is regarded as a potentially high-value crop and is being sustainably cultivated by the communities.



LitSara essential oils can be incorporated into products such as soap and shampoo to kill germs and remove odour.



Mongolia

Sustainable use of
genetic resources for
economic development

Authors

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Tserennyam Lundaa

*Lead expert, UNDP-GEF Global ABS Project
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SETTING THE SCENE



Mongolia is endowed with unique flora and fauna with high genetic diversity ...



141

mammals



13,000

invertebrates



79

fish



23

reptiles



6

amphibians



513

birds

... flora consists of ...



3,192

vascular
plants



570

moss
species



2,248

algae
species



630

fungi
species



1,069

lichen
species



Mongolia is a landlocked high-altitude country situated between Russia and China covering approximately 1,560,000 km² with a population of about 3.3 million. Here the southern edge of the Siberian taiga forest meets the Mongolia-Manchurian grassland steppes, and the Gobi Desert encounters a vast plateau. It has an extreme continental climate with long cold winters and short summers. Thanks to these diverse transitional ecosystems and extreme climatic conditions, Mongolia is endowed with unique flora and fauna with high genetic diversity.

The fauna of Mongolia comprises 141 species of mammals, 513 species of birds, 79 species of fish, 23 species of reptiles, 6 species of amphibians and about 13,000 species of invertebrates. The flora consists of 3,192 species of vascular plants, 570 species of mosses, 2,248 species of algae, 630 species of fungi and 1,069 species of lichen; among them, 120 species were registered as endemic to Mongolia. Currently 241 genera of microorganisms assigned to 11 phyla were identified in the country so far. Due to climate change and increasing anthropogenic pressure, ecosystems of the country and the biodiversity therein are facing a great threat of extinction in recent years. Assessment of rare and endangered species in the Red List using an international methodology revealed that 11% of plant species are going extinct due to habitat stress and overuse, 26% is at risk of extinction, 37% is vulnerable or at high risk of extinction in the wild and 15% is endangered. Therefore, it is essential to boost conservation of biological diversity, particularly by strengthening existing *ex situ* collections to create a national gene bank or a biological resource centre for the preservation of embryos, tissues and cell cultures of endangered species of animals and plants as well as microorganisms.

Mongolians have retained an enormous amount of traditional knowledge associated with genetic resources through the nomadic culture and daily life which are inseparable from nature. Mongolian traditional medicine has more than 5,000 years of history and has thrived by the wisdom and diligence of the ancestors and their descendants. About 11,000 traditional prescriptions developed and used by Mongolian traditional practitioners in the past are known and recorded today and almost 900 species of medicinal plants (about one third of the vascular plants in Mongolia) have been used in these prescriptions.

Modern scientific studies have discovered a vast number of biologically active compounds that are significant in science and industry from vascular and non-vascular plants of Mongolia and their potentials to be utilized in different sectors have been widely identified. A considerable and vital part of the genetic resources of Mongolia consists of microorganisms. Strains isolated from the extreme conditions such as alkaline soils, high-salt-content soils and lakes, hot springs, permafrost, deserts and transition ecosystems, have great potential to act as raw materials in many fields such as agriculture, food, pharmaceuticals and environmental biotechnology.



National framework on ABS and associated traditional knowledge

Mongolia signed the Nagoya Protocol in 2012, ratified it in 2013 and became party to it in 2014. To fulfil its obligations under the Protocol and to facilitate business models of industries that use genetic resources and associated traditional knowledge, Mongolia has recently developed a new draft Law on Genetic Resources with the support of the UNDP-GEF Global ABS Project. The main objective of this legislation is to legalize the processes of studying, registering, conserving, protecting and utilizing the genetic resources derived from the territory of Mongolia and their associated traditional knowledge, as well as to facilitate the fair and equitable sharing of benefits arising from their utilization. The legislation, with its supplementary documents, was submitted as a Bill to Parliament in spring of 2020. After the Parliamentary election in summer 2020, the newly established Parliament opened its 2020 Fall session with the Bill on Genetic Resources listed for discussion on its Calendar. However, due to the COVID-19 pandemic situation and lockdown, this schedule was delayed for several months.

In January and March 2021, the Parliament's Standing Committee for the Environment, Food and Agriculture initiated discussion of the Bill and established a main Working Group, composed of Members of Parliament, and a Sub-Working Group, composed of legal experts from the Standing Committee, relevant authorities and experts in relevant fields, including three members of the Global ABS Project team. The Sub-Working Group is responsible for the preparation of the Bill on

Genetic Resources for the Parliamentary discussion and is expected to provide professional support to the main Working group. Currently, members of the Sub-Working Group are engaged with a series of weekly discussions on the Bill.

As proposed in the Bill, genetic resources of animal, plant and microbial origin that derive from the territory of Mongolia as well as associated traditional knowledge, when the holder of which is not possible to identify, shall be in the ownership of the State. In cases where research and development are to be conducted abroad, a material transfer agreement shall be concluded between user and provider and a transfer permit across the border of Mongolia shall be granted by the CNA. Connecting the information of PIC and MAT secured in the national registration system with the ABS CHM will enable the creation of an IRCC to ensure oversight of the utilization of genetic resources along the value chain.

For successful implementation of the Law on Genetic Resources, the Global ABS Project team prepared drafts of supporting regulations to the Law as well as model contractual clauses and application forms. Also, ABS sectoral guidelines and a procedural manual were developed for both users and providers, and discussed with pertinent stakeholders before the finalization of the draft law. The initial design of a national ABS CHM or Online Registration of Utilization was developed and tested as an integral part of the existing Environmental Information Centre database.



A BIODISCOVERY CASE

Research revealed that endophytic fungi isolated from traditional medicinal plants are promising genetic resources suitable for bioprospecting

Endophytes are a group of microorganisms that reside in the living tissues of plants without causing any direct and evident negative effect to their host and may actually support the host. They are often bacteria and fungi that are relatively unstudied and recognized as outstanding source of biologically active compounds such as novel antibiotics, antimycotics, antioxidants, immunosuppressants and anticancer compounds. Study on endophytic microorganisms was initiated in Mongolia in 2009. Researchers from the Laboratory of Microbiology, Institute of Biology, Mongolian Academy of Sciences are pioneers of research on endophytic microorganisms in Mongolia.

"It is of great scientific and economic concern to isolate these important microorganisms from wild plants that grow in ecologically diverse environments of Mongolia, especially from medicinal and endemic plants. In order to gain benefits from the utilization of genetic resources, it is essential to explore and study genetic resources of our own country."

DR J. ENKH-AMGALAN, Head, Laboratory of Microbiology, Institute of Biology, Mongolian Academy of Sciences

Dr Enkh-Amgalan's team initiated their study with the isolation of endophytic fungi from eight species of traditional medicinal plants. Strains were isolated from plant roots, stems and leaves and taxonomic assignments were identified on the basis of phylogenetic analysis of the sequences of the 28S rRNA gene D1/D2 domain. As a result, strains assigned to six fungal genera, identified for the first time in Mongolia, revealed that the composition of plant tissue endophytes is dissimilar from fungi that are found in soils. Since that time several hundred strains of endophytic fungi have been isolated from plant samples and 22 genera of endophytic fungi have been identified with the help of conventional and molecular methods. Further examination for antimicrobial and enzyme activities, plant growth-promoting potentials, alkaloid production and the activities of the isolated crude alkaloids have shown that endophytic fungi isolated from Mongolian samples have high biological activities. Collectively, the above results revealed that endophytic fungi are promising organisms that are relatively unstudied and hold great potential for biodiscovery projects. The above findings suggest that utilization of endophytic fungi may not only contribute to the conservation of endangered plants by reducing the need to harvest the plant from the wild environment as raw materials, but also provide economic production of important medicines since the microorganisms are easy and cost effective to culture.

Mongolia has not yet established fully functional national ABS mechanisms. However, a number of important mechanisms essential for the implementation of ABS are under development. For example, the Ministry of Environment and Tourism is expanding its Environment Information Centre and the Database of Mongolian Flora and the Database of Mongolian Fauna have been newly developed. The newly designed Clearing House Mechanism will be enhanced for further operationalization within the Environmental Information Centre.





EYEWITNESS STATEMENT



Tserennyam Lundaa



It is evident that numerous biodiscovery projects will focus on Mongolian genetic resources covering extremophile microorganisms isolated from different environments, as well as plant and animal hosts.



"Mongolia is a country unique in its genetic resources. Especially, microbial and plant genetic resources are widely unexplored and are the most promising in both of scientific and commercial perspectives in the future. It is evident that numerous biodiscovery projects will focus on Mongolian genetic resources covering extremophile microorganisms isolated from different environments, as well as plant and animal hosts. Studies on the above resources are often limited by research capacities or infrastructures of our laboratories. Principally, scientific studies at the present time frequently require advanced methodologies and expertise to achieve reliable results and integration or product development."

"Human resources in our scientific community have high potential to serve as the heart of ABS efforts. Dr J. Enkh-Amgalan and her colleagues are representatives of the academic researchers working with us. While their work is valuable, it is not really appropriate that the academic researchers actualize the findings from their research work as ready-to-sell market products. Instead, scientific community – business sector partnerships should play a great role in the development of ABS-compliant value chains for products derived from genetic resources. To date, many studies have been done on our genetic resources, many are at the level of basic research; we need to proceed further to an advanced level taking the opportunity provided by the Nagoya Protocol. In other words, facilitation of collaborative research and R&D along with successful implementation of ABS would create a wide range of monetary and non-monetary benefits for the country. Such partnerships should involve the local communities who are the traditional knowledge holders and stewards of nature."

"Personally, I wish and hope the national legislation on ABS will be approved soon and will bring great opportunity to develop modern biotechnology and its industry in the country contributing to the conservation of biodiversity and to the well-being of the local communities, thus reducing the usage of resources from our brittle ecosystems."

TSERENNYAM LUNDAA, Lead expert, UNDP-GEF Global ABS Project in Mongolia



... the Darkhad Community tightly rely on diverse natural resources such as herbs, medicinal plants, teas, mushrooms, wild onions, fruits, berries, shed antlers, skin, meat and tallow ...



... the Darkhad people raise the Darkhad white horse, Khogorog cattle and Darkhad sheep ...



... The community hold rich traditional knowledge and practices associated with these genetic resources ...



IPLCs' capacities, Biocultural Community Protocols and SDG impacts

The beautiful, so-called Darkhad Blue Depression exists in the Khuvsgul mountainous region of Mongolia. It is roughly a thousand kilometres by road northwest of the capital city, Ulaanbaatar. The local community who lives there is known as the Darkhad Community. The community area occupies a huge territory measuring approximately 140 km from north to south and 70 km from east to west. There are numerous freshwater rivers and small lakes, which make the depression a pleasant area during the summer and the coldest spot of the country during the winter. The surrounding high-altitude mountains are an important source of valuable genetic resources. Three strictly protected areas, i.e., Ulaan Taiga, Tengis Shishged and Khoridol Saridag cover these mountains.

The Darkhad Community retain their original nomadic culture, characterized by long-distance migration in late autumn out of the depression with an early spring return. Their considerable experience, customary laws and norms and spiritual beliefs have been effectively contributing to sustainable utilization of the natural, particularly, living resources in this region. They live in harmony with their surrounding environment and tightly rely on diverse natural resources such as herbs, medicinal plants, teas, mushrooms, wild onions, fruits, berries, shed antlers, skin, meat and tallow. The community hold rich traditional knowledge and practices associated with these genetic resources which are part of the treasures of the community, families or even individuals.

With the recent increase in demand for natural products, people seek to access the specific traditional knowledge of local communities as a means of harvesting inaccessible, rare plants through the local people who know where the resources are. The Darkhad people raise the Darkhad white horse, Khogorog cattle and Darkhad sheep which resulted from traditional breeding and selection methods to fit perfectly to their tough condition in the high mountains. These breeds are well adapted to these conditions and have special characteristics to resist the coldness.

In 2018, the Global ABS Project in Mongolia implemented a pilot project to develop a BCP with the local community at Darkhad Blue Depression. The designated mission team aimed not only at developing the community protocol, but also at raising awareness with the goals of reducing the loss of biodiversity, stressing the importance of genetic resources and associated traditional knowledge as source of innovation, contributing to local community knowledge on their rights and responsibilities over the resources. All of this was undertaken for the effective implementation of the third objective of the CBD at the community level.

Using a participatory approach, the mission team organized a meeting within the local community intended to cover the different members, i.e., youngsters and elders, women and men, and even educated and less educated. All participants were interested in joining the discussions and gaining understanding from the talks, nevertheless, information such

as access and benefit sharing and community protocols were brand new to them. When they began to understand the concept of a BCP and the advantages that could come from this bottom-up tool, they began to identify possible terms and conditions and potential support needed from outsiders to improve their future well-being.

Mongolia considers traditional knowledge associated with genetic and biological resources as part of an intangible cultural heritage; however, it does not currently promote any sharing of benefits to the local communities. When the Darkhad Community was introduced to the main concept of the Nagoya Protocol, that local communities have rights over their resources, they began to learn how to negotiate benefit-sharing conditions prior to contracting with any users who seek access to their traditional knowledge and genetic resources.

The key lessons learned, or challenges, were:

- The community protocol was a new concept for local community, even for the mission team itself. Therefore, it was essential to identify accurately the expectations for developing a BCP before starting.
- Values of the Darkhad Community were, most importantly, their land, resources therein, community customary laws and practices and the aspiration to pass down these values to their children as they had been inherited from their ancestors.
- It was too early to try to improve negotiation skills of the community since the relevant national legal environment had not yet been approved. It was important for the mission team to focus on discussion of benefit-sharing options for the local communities after introduction of the general ABS principles.

After a participatory approach meeting, one of the young Darkhad herders expressed his feeling that youths should listen to and learn from the elders. He witnessed elders expressing surprisingly rich traditional knowledge that he had not heard about. On that day, he learned a lot about the plants growing in the land surrounding him and their

diverse means of utilization. He found the meeting very fruitful for him. In the end, he believed that thanks to modern science and technology, the resources will remain *in situ* and new products derived from their utilization will contribute to human well-being. The community expressed their interest in further awareness-raising meetings because such activities opened new possibilities for them.

The biodiscovery case and the development of the BCP contributed to the following SDGs:

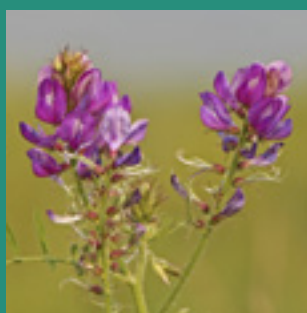
- SDG 2 (Zero hunger): The domesticated animals of the local community that are perfectly adapted to the harsh environment, particularly, the Darkhad white horse, wide-tailed sheep and Khogorog cattle, and sustainable utilization of products from that livestock will contribute to maintaining genetic diversity in food production (Target 2.5).
- SDG 3 (Good health and well-being): Research and development using local genetic resources, especially easy-to-culture microorganisms instead of endangered medicinal plants will contribute to Target 3.B, that is, the support of research, development and universal access to affordable vaccines and medicines.
- SDG 9 (Industry, innovation and Infrastructure): The advantage of using rich genetic resources is that there will be a greater potential for growth and interest in biotechnology development, thus it will assist in fostering innovation under this goal. Financing and facilitating research on local genetic resources would contribute to Target 9.5.
- SDG 15 (Life on land): Documentation of traditional knowledge of local communities as well as promoting research will enhance the implementation of the Nagoya Protocol and conservation of biological resources (Target 15.5), promote ABS (Target 15.6) and reduction in the utilization of endangered plant species (Target 15.7).
- SDG 17 (Partnerships for the goals): Engaging with local and scientific community for biodiscovery projects would contribute to Targets 17.6, 17.7, 17.8, 17.15 and 17.16.



... research and development using our rich traditional knowledge associated with utilization of genetic resources will bring more economic benefits, while conserving the natural resources.



... every research and development effort that is utilizing genetic resources should be registered in the national database ...



... collaboration between sectors and cooperation on the implementation of the Law will assist in the creation of a basis for economic diversification ...



MESSAGE FROM AN SDG ADVOCATE

"Mongolia's government approved a Green development policy in 2014, which specified the importance of spending at least 2% of Gross Domestic Product (GDP) on research and development to boost the national economy and improve science-based decision making. The current level of such spending is less than 0.2% of GDP. The economic structure has been highly dependent on the mining sector. With the reduced demand for fossil fuel in China, Mongolia needs to invest in knowledge-based economy development. I believe that research and development using our rich traditional knowledge associated with utilization of genetic resources will bring more economic benefits, while conserving the natural resources.

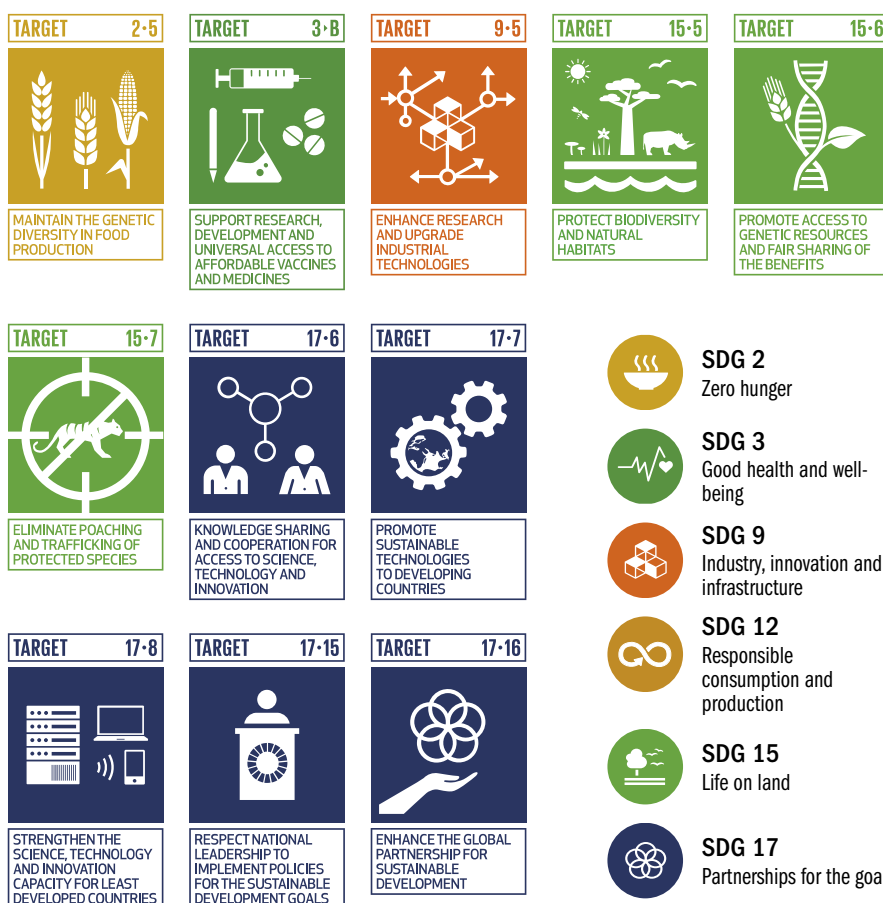
"During the consultations on the draft Law on Genetic Resources with relevant sectors, it was interesting to observe differences in opinions and attitudes of stakeholders from the agriculture, pharmaceutical and biotechnology sectors. Representatives from the scientific community of the agriculture sector expressed great interest in approval of the ABS law to accommodate their need for business models through which they could get benefits from the utilization of genetic resources. In contrast, there was concern from private companies in the pharmaceutical sector about the requirement of special permits for the use of plant species and traditional medicinal knowledge, which might create pressure on start-up companies. Although the traditional knowledge associated with genetic resources utilization is a state property, according to the draft Law on Genetic Resources, every research and development effort that is utilizing genetic resources should be registered in the national database only for the purpose of keeping track of genetic resources utilization. This was communicated during the discussions and private-sector stakeholders understood the reason for this national registration. A group of officials from the Ministry of Health has expressed great support for the Law, due to the need for protection of traditional medicine as a sector. Earlier, the Ministry of Health had failed to adopt national legislation on traditional medicine. Collaboration between sectors and cooperation on the implementation of the Law will accelerate the implementation of SDGs 2, 3, 9, 12 and 15 and it will assist in the creation of a basis for economic diversification."

KHISHIGJARGAL KHARKHUU, National Project Coordinator and Programme Analyst,
UNDP Mongolia



Traditional medicine, inherited from our grand generations, has now been regenerated and Mr D. Natsagdorj, Honored Doctor of Mongolia, founder of the Centre for Research of Traditional Medicine, is putting great effort toward investment in developing the sector using plant resources and traditional knowledge. He has said, *"Mongolian nature has its own unique quality of medicinal plants, maintaining our traditional knowledge of using the resources for the wealth and health of nations. However, it is quite disappointing to observe people's attitude towards the usage of the medicinal plants for themselves. It is dangerous to use these medicinal plants without knowing the individual's body type, condition and the dosage of using certain medicinal plants to cure illness and symptoms. Therefore, there is a need to have national policy on safeguarding the use of plant genetic resources to support the traditional medicine as a priority sector."*

Professor G. Chojamts, School of Medicine, Health Sciences University of Mongolia, the leading expert in traditional medicine has said, *"Our genetic resources can feed us for many generations. They have a much longer life than the underground mineral resources."* According to an estimate of the Mongolian Water Forum "Us Khelts" NGO, which completed a socio-economic assessment in 2018, monetary benefits from the utilization of genetic resources in agriculture, pharmaceuticals, industry, science, technology and environmental protection can reach MNT2.5 trillion (about US\$877 million) and this is equivalent to 9.9% of the current GDP.



Mongolian nature has its own unique quality of medicinal plants, maintaining our traditional knowledge of using the resources for the wealth and health of nations.



Our genetic resources can feed us for many generations. They have a much longer life than the underground mineral resources.





REPUBLIC OF THE UNION OF Myanmar

Laying the foundations
for implementation of
the Nagoya Protocol

Authors

Ian Thompson, Biplove Choudhary, Ko Phyo Thu
UNDP, Myanmar Country Office







SETTING THE SCENE



Myanmar is rich in biodiversity due to its diverse ecosystems:



oceans



drylands



mountains

... ecosystem types include ...



forest



freshwater



coastal and marine

... the country sustains more than 18,000 species including ...



11,800

vascular plants



1,200

butterfly species



251

mammals



1,056

birds



282

reptiles



82

amphibians



With a land area of 676,553 km², Myanmar is the largest country in mainland Southeast Asia but is ranked at 145th out of 189 countries under the UNDP's Human Development Index. Until the recent coup, the Government was moving forward with a "Sustainable Development Plan, 2018–2030" to achieve people-centred, inclusive and continuous sustainable development. This goal acknowledges that there are significant differences in poverty and levels of development among the nation's states and regions, and that this inequality must be reduced. According to the latest UNDP estimates, rural poverty is 30% and in coastal and mountainous areas, about 1 in 7 people struggle to meet their basic food needs. Myanmar's current development context underscores the interrelationship between governance, environment and sustainable development.

Myanmar relies largely on its natural resources, including biodiversity, for livelihoods and economic growth. The country is rich in biodiversity due to its diverse ecosystems from the ocean to the south, through drylands in the central areas, and rising to mountains in the west, east and north. Among the 64 mapped ecosystem types, the forest types are integral to the stability of the environment, covering about 42% of the land base. The country supports a large diversity of freshwater ecosystems, ranging from fast-flowing mountain streams to wide, slow-flowing lowland rivers, two very large lakes and numerous important wetlands. Myanmar is also endowed with extensive coastal and marine ecosystems, with half a million hectares of brackish and freshwater swampland supporting mangroves. Overall, the country sustains more than 18,000 species including 11,800 species of vascular plants, 1,200 butterfly species, 251 mammals, 1,056 birds, 282 reptiles and 82 amphibians. Among the plants are 1,540 species with known medicinal uses, 96 bamboos, and many crop plants, including endemic rice species. According the country's 6th National Report to the CBD, in 2018, the main direct threats to Myanmar's biodiversity included over-exploitation of wildlife and fisheries (much of it illegal, with increasing markets for plants and wildlife derivatives in neighbouring countries), deforestation (recently at 330,000 ha/yr), forest degradation, encroachment for urbanization, forest fires and introductions of alien invasive species. Despite the many threats, the country has substantial biodiversity and tremendous potential to embark on a programme that uses its traditional knowledge and medicines to improve national industries, as well as people's lives, through a strong ABS programme.

To enhance the protection of its biodiversity, Myanmar had embarked on a comprehensive programme under their revised National Biodiversity Strategic Action Plan. In 2018, new laws were adopted including the revised *Forest Law* and the *Conservation of Biodiversity and Protected Areas Law*, both of which are helping to move Myanmar's approach to natural resources management along the pathway of global good practices. Sustainable agricultural practices are being promoted and research is being conducted to conserve plant genetic diversity at the Agriculture Research Centre in Yezin. Guided by the National Forest Policy and Master Plan, the Forest Department has made efforts to expand the coverage of protected areas

during the last decade. There are now 42 protected areas (95% terrestrial), including five Ramsar sites (four of which are new since 2015) and two new United Nations Educational, Scientific and Cultural Organization World Heritage aquatic areas. The percentage of land area covered by all types of protected areas in 2020 is close to 8%, with negotiations for three more national parks currently ongoing with local communities. Myanmar ratified the Nagoya Protocol in 2014, and while implementation is an important NBSAP objective, the country had been unable to move forward owing to lack of technical capacity, until the UNDP-GEF Global ABS Project began in 2017.

Current status of implementing an ABS regime in Myanmar

Prior to the Global ABS Project, Myanmar had only recently appointed its National Focal Point (Mr Hla Maung Thein (Director General at the Environmental Conservation Department, Ministry of Natural Resources and Environmental Conservation), but had not initiated a programme plan, no analysis of the legal gaps, and no policy in place under which to implement an ABS regime. The Global ABS Project, which was designed to inform about, and increase capacity to implement, the Nagoya Protocol, has been a remarkable catalyst in assisting Myanmar to move forward with developing its ABS administration. The Global ABS Project has focused on assessing the current knowledge level and providing capacity building, developing a legal gap analysis, providing a policy framework with a draft policy and providing tools with which the protocol could be implemented. In addition, the Project provided training to several communities and assisted two of these in the production of BCPs, the villages of Pone Tat and Bone Baw. All government ministries with a role in managing genetic resources (including Agriculture with four departments, Natural Resources with three departments, Industry, and Education with three departments) and several cosmetic and biotechnology industries were interviewed to determine their level of knowledge about ABS and to understand the current policies in place for gene research and any international interest in genetic resources.

The Global ABS Project provided several workshops and focused training sessions, including a workshop designed to assist the Competent National Authorities (CNAs) to determine what to do if faced with requests based on a series of scenarios. As a result of the training workshops and information sessions, as of the end of 2019, Myanmar had achieved the following results:

- A National Focal Point (NFP), with a full complement of staff, was established at the Environmental Conservation Department of the Ministry of Natural Resources and Environmental Conservation.
- Nine CNAs were appointed; eight within government ministries, and one from a university, all of whom had training in their roles.
- A national publishing authority was appointed.
- A formal process was initiated for establishing a national policy and assessing options for an ABS law, based on a thorough legal gap analysis.
- Requests from several international agencies with respect to accessing genetic resources in Myanmar, some that required ABS agreements and some that did not, were received and managed.
- The Nagoya Protocol requirement to post information on the Global ABS CHM for contact information for the NFP and CNAs was met.



... there is a huge opportunity now for Government to take advantage of the wealth of genetic resources that is available by fostering sustainable development in biotechnology, pharmaceuticals, natural foods, agriculture and cosmetics ...



... thanakha is commonly used in the cosmetics industry to promote healthy skin ...



... thanakha has also been discovered to have anti-inflammatory, antibacterial and antifungal properties ...



Biodiscovery research and agreements

Biodiscovery in Myanmar is in its infancy in many respects, except in certain specific disciplines such as agriculture and cosmetics. There is also a nascent but growing pharmaceuticals industry, with sales (within country and exports) of Myanmar-derived products reaching US\$600 million in 2016 and expected to exceed \$1 billion by 2022. There is a small active biotechnology sector but largely within government and universities and the sector lacks a national policy. In Myanmar, the government Department of Traditional Medicine and the University of Traditional Medicine both exist in recognition of the vast array of plant and animal products used throughout communities, with associated traditional knowledge, to treat many common ailments. There is a large catalogue of medicinal plants and animals that have been studied to understand their properties available from the Ministry of Health, Department of Traditional Medicine, which provides information on 420 of these species. As a result, there was a huge opportunity, as the country hoped to move to a more open economy, for Government to take advantage of the wealth of genetic resources that is available by fostering sustainable development in biotechnology, pharmaceuticals, natural foods, agriculture and cosmetics. This can be accomplished with ABS policies and national policies for research in genetics, and with active programmes and support in place.

Currently no international ABS agreements have been completed but several were in negotiation. There is a current research agreement among a local cosmetics company (KSH Beauty Products (Shwe Thone Dary Thanakha) Co., Ltd., henceforth KSH Ltd.), the Department of Research and Innovation, Chemical Technology Research Centre, and Yangon University to further develop the properties of 'thanakha', a product from two species of trees: *Hesperethusa crenulata* and *Limonia acidissima*, which is commonly used in the cosmetics industry to promote healthy skin. More recently, however, thanakha has also been discovered to have anti-inflammatory, antibacterial and antifungal properties. The research on thanakha provides an excellent example of a biodiscovery partnership that can provide green economic benefits. Not only have formal partnerships been created, but there has also been a determination that subsequent research can result in new products that will be beneficial to what is a growing cosmetics industry, both in Myanmar and globally. It is clear from the current partnerships that there is interest in promoting a sectoral based industry-science collaboration leading to improved cosmetic product development.

To improve the future possibilities of collaborative research and to foster ABS agreements, bioproduct development and biotrade in the cosmetic and pharmaceutical industry more generally, requires some important changes in government policy. Such changes could take a view to encourage research and partnerships through: a clear ABS regime (i.e., policy, regulation, law or all three), policy development for pharmaceutical and biotechnological research (currently there are no policies for science in these sectors), and incentives for industrial collaborations with science agencies and universities. This could be accomplished, in part, by providing better equipment and facilities, and by developing a business-enabling environment that supports national and international interest in Myanmar-branded products.



Workshop on improving a draft Biocultural Community Protocol with members of the Asho-Chin ethnic group in Bone Baw village, Magway Region

Mr Kenneth Sein, from KSH Ltd., has a research agreement with the Biotechnology Research Department of the Ministry of Education, in Yangon, to study properties of thanakha. His cosmetics firm relies on a supply of raw materials from local farmers with whom he has agreements. While this is partly in the realm of biotrade, the research discussed above is leading to national and international interest in the biochemical properties (i.e., derivatives) of thanakha that would require ABS agreements, leading to benefits for the country. KSH Ltd. has also moved forward by funding costs for safety testing of its thanakha products to assess possible contamination by microbes. No contamination has been found and, as a result, KSH Ltd. can assure its clients that their cosmetic products are safe to use.

"Thanks to our partnership that dated back to 2018 with a Regional BioTrade project in Southeast Asia, we learned essentials of ABS through BioTrade Principles and Criteria and actively participated in a series of national level events and the Asia-Pacific Community of Practice Workshop in Siem Reap, Cambodia in 2018 and a number of training-cum-knowledge sharing events that were jointly organized by the Global ABS Project and the Myanmar ABS NFP.

"To reflect our commitments driven by what we learned about the Nagoya Protocol, we have integrated ABS concepts into our business strategies to formalize our fair and equitable business practices: not only sourcing thanakha raw materials from farmers at a fair price, but also sharing with them about market information and relevant technologies, building stronger relationships as time goes on, advising and supporting them to preserve local thanakha varieties along with the cultural-traditional heritage of thanakha.

"While we guarantee our domestic and overseas customers the product safety and efficacies based on the outcomes from our R&D collaborations with the government's Biotechnology Research Department, we share the R&D findings with farmer-based small- and medium-sized enterprises that can make use of such information to market their value-added thanakha products for local customers."

KENNETH SEIN, MD, KSH Beauty Products (Shwe Thone Dary Thanakha) Co., Ltd. Yangon, Myanmar

Mr Sein gave freely of his time to attend several Global ABS Project workshops to present the industrial stakeholders' perspectives on ABS implementation and the importance of implementing ABS to ensure that benefits accrue to the country. He and his industrial partners are highly supportive of implementing the Nagoya Protocol in the country.



EYEWITNESS STATEMENT



... a research agreement to study properties of thanakha is leading to national and international interest in the biochemical properties ...





... the “*Ethnic Rights Protection Law*” ensures that ethnic groups have the right to be informed about and work with users who wish to collect genetic resources in their areas ...



... the genetic resources of the country could continue to be lost with little in the way of benefits achieved or intellectual property protected ...



Indigenous peoples and local communities: Biocultural community protocols

UNDP partnered with a local non-government organization, POINT (Promotion of Indigenous and Nature Together), to provide education to local communities and to help two of them develop their BCPs. Two communities, Bone Baw and Pone Tat, were selected for intensive instruction on ABS and to help work on preparing their community protocols. The methods used and the BCPs themselves from the two communities will serve as models for other communities as the ABS program is implemented. Myanmar enacted the “*Ethnic Rights Protection Law*” in 2015. This law ensures that ethnic groups (indigenous peoples) have the right to be informed about and work with users who wish to collect genetic resources in their areas. The BCPs provide a way for users to work with the communities in this regard.

Key messages

As the UNDP team worked together with the NFP at the Environmental Conservation Department on delivering the Global ABS Project, several key adaptations had to be made, including augmenting the level of detail presented early in the project owing to the very low level of understanding of the Nagoya Protocol among government agencies, industry and the public. For example, at one of the information-gathering sessions, when the scientists were asked what they were doing currently with the plant extracts that they developed, the answer was “*oh, we put them in our packsacks and take them out of the country,*” making the country vulnerable to biopiracy. As a result, the team needed to conduct training sessions with each of the main government research groups that work with genetic resources. The key message to the team was that, aside from the training provided, in the absence of an ABS regime and follow-up through the NFP, the genetic resources of the country could continue to be lost with little in the way of benefits achieved or intellectual property protected.

This project team found that only limited information on the value of genetic resources is available at the national level, hence motivation for developing government policy direction for research related to industry is low. For example, there is no national biotechnology policy. The country needs to begin conducting concerted research on the value of its genetic resources and to use the information to leverage better facilities and policies for research in order to move forward. For example, there has been great interest among many other countries, such as Japan, Korea and Germany, in using Myanmar genetic resources for industrial-related research, but very little such research or capacity exists in Myanmar itself. Further, countries, such as Myanmar, with limited expertise and where language is a barrier, require continuous technical support to move forward with implementing their ABS regime. There is a distinct need for training on contract writing, management of ABS agreements, and expanding training, awareness raising and capacity building to many more local communities.



MESSAGE FROM AN SDG ADVOCATE

“The Government of Myanmar has demonstrated a firm commitment to deliver on its international treaty obligations to comply with the Nagoya Protocol in Myanmar and meeting the Aichi Targets while making important contributions to the Sustainable Development Goals of eliminating hunger (SDG 2) and supporting life on land (SDG 15). Over the past more-than-two years, aided by the Global ABS Project, the Environmental Conservation Department, Ministry of Natural Resources and Conservation with the participation of indigenous communities and civil society organizations has fully embraced the Nagoya Protocol and laid down a concrete pathway for its institutionalization, development and implementation. Credible progress has been made towards creating enabling conditions for biodiversity conservation and sustainable use as well as equitable sharing by both providers and users of genetic resources in Myanmar. However, in order to fully comply with the Nagoya Protocol in its legislative and institutional dimensions and cement the policy space for maximizing the benefits, and to keep up the momentum gained thus far, the Government will need continued international financial assistance and peer-learning opportunities to benefit from the lessons learned especially within the ASEAN region but also beyond. While the Global ABS Project deals directly with several of the SDGs, especially SDG 15 (15.6), an important aspect for a developing country like Myanmar is to reduce poverty by wisely using its natural resources, including its genetic resources. SDG 1 speaks to poverty alleviation, and as Myanmar moves forward in further instituting democratic change, the promotion of green industries that wisely make use of genetic resources will assist in reducing the widespread poverty within the country.”

BIPLOVE CHOUDHARY, UNDP, Myanmar Country Office



SDG 1
No poverty



SDG 2
Zero hunger



SDG 15
Life on land

TARGET 15.6



**PROMOTE ACCESS TO
GENETIC RESOURCES
AND FAIR SHARING OF
THE BENEFITS**



Credible progress has been made towards creating enabling conditions for biodiversity conservation ...



Training event on CBD, ABS, and the Nagoya Protocol, Nov. 2019, for community leaders and youths, Magway Region





REPUBLIC OF **Tajikistan**

Negotiating and contracting
for access to genetic resources
and sharing of benefits arising
from their utilization

Authors

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Sukhrob Irgashev

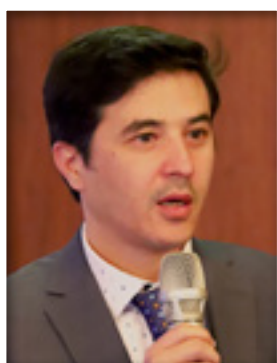
*Technical Project Coordinator ABS Project,
Tajikistan*







SETTING THE SCENE



S. Irgashev



Tajikistan possesses an abundance of species diversity of flora and fauna, valuable genetic resources and endemic and epibiotic species of flora and fauna ...



300

plant species
grown for food



81

mammal
species



385

birds species



2

amphibian
species



49

fish species



12,000

invertebrate
species



The Republic of Tajikistan is a predominantly mountainous country in Central Asia, with 93% of its territory composed of mountains. Tajikistan contains a great wealth of biodiversity resources in species, ecosystems and landscapes. Although the nation is small in terms of its overall landmass, Tajikistan displays a wide variation in elevations and geology, leading to a broad range of habitats as reflected in a high diversity of species. The ecosystems represented range from high mountains to lowland desert and riparian woodlands. The country is divided into plains and low mountains (300 to 1,600 masl) with desert savanna-like flora and fauna with grey desert soils; midlands (1,600 to 2,800 masl) with mountain woodlands and forests and brown mountain soil; highland zones (2,800 to 4,500 masl) with alpine cold desert flora and fauna, with meadow-steppe, steppe and desert soils and nival zones (4,500 masl) with cryophyte flora on skeletal soils. The country's flora and fauna make up 1.9% of the world's species, with wild relatives of cultivated plants totaling 1,000 species, in addition to 1,132 endemic plant species.

This significant abundance of species diversity of flora and fauna, valuable genetic resources and endemic and epibiotic species of flora and fauna have developed in extremely diverse environmental conditions. This great diversity is being preserved in natural ecosystems, and, partly, in agricultural ecosystems. The main sources of the rivers which supply water into the basin of the Aral Sea are glaciers and perennial snow cover. The country's water resources are used for irrigation of cotton, industrial and domestic needs and 95% of the total electrical energy production.

Of particular importance are plants grown for food that comprise about 300 species, while the gene bank for grain, leguminous and oil crops contains about 3,000 specimens. Medicinal plants are the basis of traditional medicine, which is widely used by the population in their daily lives. Additionally, there are 81 species of mammals and 385 species of birds, two species of amphibians, 49 species of fish, and 12,000 species of invertebrates. A large number of these animals species are endemic to Tajikistan.

The biodiversity of Tajikistan is of great importance at the global, regional and national levels. The richness of biodiversity is manifested at the genetic, species, population, biocoenotic and ecosystem levels. There are many relict and endemic species here, while most of the components of biodiversity are vulnerable to anthropogenic factors.

Genetic biodiversity resources promote effective agriculture and higher economic profits based on improved features of breeds and cultivars without reclamation of new areas. Local varieties of breeds are also important for animal breeding. They are more productive and are less susceptible to diseases. Entire subdivisions of scientific institutes work on perfection of methods of maintenance of plant cultivars and animal breeds for more effective and productive management and the development of cultivars and breeds with improved resistance to pests and diseases and persistence in the face of the challenges of climate change.

National Framework on ABS and its associated traditional knowledge

Tajikistan, like other countries involved in the implementation of the UNDP-GEF Global ABS Project “*Strengthening Human Resources, Legal Framework and Institutional Capacities to Implement the Nagoya Protocol*,” also strengthened the capacity of national experts and consultants, as well as representatives of Tajikistan scientific institutions. These institutions include the National Academy of Sciences and its subordinate Institutes of Botany, Physiology and Plant Genetics, the Institute of Zoology and Parasitology named after E.N. Pavlovsky, the Centre for Innovative Biology and Medicine, the Tajik Academy of Agricultural Sciences, Livestock Institutes, the Institute of Horticulture and Vegeticulture, the Institute of Farming, the National Republican Centre for Genetic Resources and the Centre for Livestock Biotechnology. Other stakeholders include the Ministry of Justice, the Ministry of Economic Development and Trade, the Ministry of Agriculture, the Committee for Environmental Protection under the Government of the Republic of Tajikistan, the National Patent Information Centre, as well as individual commercial organizations. The subject-matter targets of the capacity-strengthening activities included issues of MAT, PIC and the conclusion of contractual agreements for the use of genetic resources of plants and animals and microorganisms in the field of bioresearch and commercialization, both nationally and internationally.

Potential cases for biodiscovery

Under the auspices of the Global ABS Project, contracts were signed between the Korean National Arboretum of the Korean Forest Service and the National Biodiversity and Biosafety Centre (NBBC) of the Republic of Tajikistan for the collection, study and storage of wild species of flowering, ephemeral and ephemeroid plants and wild forms of fruit and ornamental trees growing in mountainous areas of the country. This contract contributed to close cooperation between scientific organizations of the state parties to the treaty, the exchange of experience and mutually beneficial relations in the field of bioresearch. Under this contract, several regional and national conferences, seminars and trainings were held with the involvement of all stakeholders, and information materials for joint expeditions and studies were prepared and published. This contract allowed the NBBC as Tajikistan’s representative in the field of biodiversity, genetic resources and bioresearch to stipulate conditions for mutually beneficial cooperation in the long term in order to further benefit from the study and use of plant genetic resources.



... priority plant species collected, studied and documented include in particular, plant species of global importance for breeding:



Hordeum bulbosum,
Poaceae



Punica granatum,
Lythraceae



Ficus carica,
Moraceae



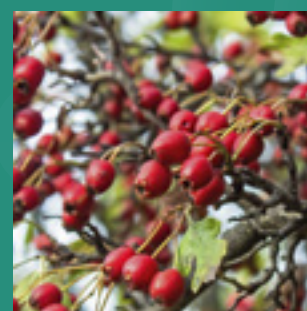
Juglans regia,
Juglandaceae



Pistacia vera,
Anacardiaceae



Fritillaria regelia
and *Tulipa subquinque-*
folia, Liliaceae



... one type of fruit crop was collected and documented in accordance with ABS principles, namely the Turkestan hawthorn, *Crataegus turkistanica*, Rosaceae ...





Joint field expedition for collecting and study of plant genetic resources, Asht district, Sughd region



Study and identification of collected plant materials

Within the framework of cooperation between Korean and national specialists, joint field expeditions are conducted in the mountainous territories of Tajikistan. In the process of these joint field expeditions, the collection, study and description of the collected plants are carried out, as well as the collection of information on the geographical habitat, natural and climatic conditions, coordinates and other data on the collected plants. The priority plant species within the framework of this project are cereal and fruit species, in particular those that belong to globally significant species and, in particular, plant species of global importance for breeding: *Hordeum bulbosum*, Poaceae; *Fritillaria regelii* and *Tulipa subquinquefolia*, Liliaceae; *Punica granatum*, Lythraceae; *Ficus carica*, Moraceae; *Juglans regia*, Juglandaceae; *Pistacia vera*, Anacardiaceae and others.

The main benefits for the country are the strengthening of human resources and the training of specialists in the field of botany, genetics, physiology and systematics of plants through short-term and long-term internships in scientific institutions of Korea. This experience has allowed the country to strengthen the development of relations between many scientific, production and commercial organizations both at the national and international level in the field of bioresearch of genetic resources with a view to their further commercialization on mutually beneficial terms.

In particular, within the framework of cooperation with Korean specialists, one type of fruit crop was collected and documented, namely the Turkestan hawthorn, *Crataegus turkistanica*, Rosaceae, which was documented in accordance with ABS principles and for which a certificate has been prepared for storage and bioresearch with further commercialization in the field of selection and development of new resistant varieties of hawthorn.

One of the most promising areas of cooperation between scientific institutions and production organizations as owners of genetic resources is the use of medicinal plants for pharmaceuticals and cosmetology. The regional training on negotiating and concluding contracts within the framework of the Global ABS Project has strengthened the capacities of representatives of scientific institutions and commercial organizations, in negotiations and stipulation of more detailed and substantive conditions with potential partners and conclusion of agreements reflecting the requirements of MAT and PIC of the parties on access to genetic resources and benefit sharing.



Seed conservation certificate



"Within the framework of cooperation of the National Center for Genetic Resources of the Tajik Academy of Agricultural Sciences with the Scientific Research Institution of Norway (Svalbard), joint field expeditions were carried out to collect, study and store genetic resources of grain and leguminous plants and their wild relatives growing in the mountainous regions of Tajikistan.

"The procedure for obtaining permits and further implementation of all activities for the collection, study and storage of genetic resources since 2014 has been carried out in accordance with the Nagoya Protocol and the ABS principles, since at the moment it is the only internationally recognized protocol on access to genetic resources and benefit-sharing from their application. In this regard, all scientific, industrial and other organizations, to one degree or another dealing with biodiversity and genetic resources, follow this procedure. Thus, annually, the National Republican Centre for Genetic Resources, in agreement with the NBBC as the authorized body for the implementation of the Nagoya Protocol in Tajikistan, receives permits for conducting research activities in the territory of the Republic of Tajikistan in the field of biodiversity and genetic resources.

"The knowledge and experience gained through the implementation of the Global ABS Project's initiatives to strengthen human and institutional capacities and the legal framework allowed the improvement and simplification of the existing scheme for issuing permits to all stakeholders in accordance with ABS principles and, accordingly, to expand the potential of both providers and users of genetic resources."

MAVLON PULODOV, Researcher, National Republican Centre for Genetic Resources of the Tajik Academy of Agricultural Sciences



EYEWITNESS STATEMENT



Mavlon Pulodav



... annually, the National Republican Centre for Genetic Resources receives permits for conducting research activities in the territory of the Republic of Tajikistan in the field of biodiversity and genetic resources ...





... pilot models of Biocultural Community Protocols were developed with mulberry and Marco Polo sheep (Argali) ...



Biocultural Community Protocols

In the process of implementing the Global ABS Project's activities, one of the priority areas was the development of BCPs for access to genetic resources of plants and animals with the active involvement of representatives of local communities. According to the project plan, in cooperation with an international consultant, a three-day training course was held to train trainers on "Development of a biocultural community protocol" with the participation of 40 people, representatives of departments, scientific organizations, commercial and public organizations and other stakeholders. During the training, the participants were presented with the basic principles of a BCP and its role in the preservation of genetic resources and traditional knowledge associated with them.

The participants were also given the task to develop pilot models of protocols and conducted an assessment of genetic resources to determine the priorities of the local population, in particular, the owners of genetic resources. As a result of the training, two groups of experts were selected who developed two BCP examples, one with mulberry and the other with Marco Polo sheep (Argali), taking into account traditional knowledge associated with each example and the interests of the relevant local communities. The BCPs were developed as model projects on the basis of which it will be possible to develop similar protocols for other types of genetic resources.

In the process of developing the BCPs, an international consultant provided advisory support, during which the protocol formats, main directions and steps were provided. Online meetings with national experts were held and the information materials collected during interviews and at individual meetings were organized and presented.



Dr N.M. Safarov

Results and importance of the Global ABS Project for Tajikistan

"The implementation of the Global ABS Project was entrusted to the partner of the UNDP in Tajikistan, the NBBC, as the authorized body for the implementation of the CBD and its protocols, in particular the Nagoya Protocol on Access to Genetic Resources and sharing the benefits of their use. After analyzing the nation's laws and regulatory legal documents, it was decided to develop a new draft Law on Access to Genetic Resources and Benefit-Sharing in accordance with the Nagoya Protocol and ABS principles to regulate the issue of plant, animal and microorganism genetic resources at the national level taking into account international requirements.

"As part of the implementation, 12 seminars, working meetings and round tables were held to discuss the need for this law and the goals, objectives and main directions that will be regulated by it. In general, more than 250 experts and specialists from ministries and departments, academic and scientific institutions, public and commercial organizations and other interested parties took part in all the events.



"International consultants made a significant contribution to the preparation of the project. In advisory and practical capacities, they helped national experts and consultants in the preparation of the draft law. Two international workshops were held with the participation of international experts who presented the experience of advanced countries in the regulation of the issue of genetic resources in accordance with the principles of the Nagoya Protocol and ABS. Based on the results of the work of national and international experts and consultants, a draft Law 'On Access to Genetic Resources and Sharing Benefits from Their Use' was prepared. At the moment, this draft Law has passed the first reading with the participation of deputies of the Majlisi Namoyandagon of the Majlisi Oli of the Republic of Tajikistan, specialists from ministries and departments, academic and scientific institutions and other interested parties. After making additions and changes, the draft Law will be reviewed by an expert commission and then it is expected to be submitted to Parliament for consideration and adoption. The draft Law consists of 8 chapters and 33 articles, and was prepared in three languages. The main working option is the Tajik language option.

"One of the not-unimportant aspects in the implementation of ABS principles is the traditional knowledge of local communities associated with the use of biodiversity and, in particular, genetic resources, which were studied and recorded as part of the project's initiatives. The issue of traditional knowledge of local communities is included in the draft Law as one of the priority principles for the conservation and use of biodiversity and genetic resources.

"Also, within the framework of the Global ABS Project, a contract was concluded with a national company to develop a CHM portal, that is, an online permitting system and a database of genetic resources and traditional knowledge. Seminars, workshops and consultations were held with the participation of specialists, consultants and experts. As a result,

a National Portal for CHM, based on information resources provided by international consultants and experts, has been developed. The contracting company prepared a user guide and conducted a training course for specialists of the NBBC on use of the portal and permitting system, entering information into the databases, and portal maintenance. At the moment, the portal has passed all tests and the database is in the process of being populated with the relevant information. It will have online access available through the website of the NBBC. Its main purpose will be to facilitate access to genetic resources and associated traditional knowledge with the potential for commercialization for scientific organizations, companies and individuals, as well as to develop cooperation between providers and users of genetic resources and associated traditional knowledge for mutually beneficial cooperation.

"The acquired knowledge and skills in the field of legislation, negotiation and preparation of agreements, development of a protocol for the biocultural communities and much more have contributed to the development of a new and effective branch of relations between providers and users of genetic resources. In general, the implementation of the Global ABS Project for Tajikistan gave an invaluable impetus to a new vision for the use of genetic resources and traditional knowledge, governed by the Nagoya Protocol and the principles of access and benefit-sharing.

"The experience of this project has contributed to the strengthening of the legal, institutional and human foundations for Tajikistan in the field of genetic resources, as well as having determined the further direction of movement in the field of research and commercialization of genetic resources and their conservation and sustainable use."

DR NEIMATULLO M. SAFAROV, Professor, Coordinator of the Convention on Biological Diversity, Tajikistan



SOCIALIST REPUBLIC OF Viet Nam

ABS from theory to practice
under the Nagoya Protocol

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SETTING THE SCENE



Viet Nam
is one of the world's
most biologically diverse
countries ...



15,000

species
of plants

10%

endemic plant
species

... the economy
is based on the
utilization of natural
resources in ...



agriculture



forestry



fisheries

... great benefits
are expected for the
country due to the rapid
development of ...



biotechnology



pharmaceuticals



cosmetics



trade



Being a Southeast Asian country on the Indochina peninsula that is endowed with abundant and rich biodiversity, Viet Nam is one of the world's most biologically diverse countries. Of the more than 50,000 known species in its territory, there are more than 15,000 species of plants, of which around 10% are endemic. A wealth of traditional knowledge is associated with such rich biodiversity, particularly in the context of Vietnamese traditional medicine.

Biodiversity plays an important role for the economic development of the country, as the economy is still based on the utilization of natural resources especially in the fields of agriculture, forestry and fisheries which account for a significant percentage of the national economy. Moreover, the rapid development of biotechnology, pharmaceuticals, cosmetics and trade is expected to bring great benefits for the country. Therefore, genetic resources are among the renewable resources which can be considered a key factor of sustainable development in Viet Nam. Genetic resources meaningfully contribute to poverty reduction and promotion of national sustainable economic development and are a component of the natural resources which Viet Nam attempts to conserve.

Being aware of the importance and value of biological resources and cognizant of the fact of unsustainable use and degradation of biodiversity, the Government of Viet Nam has committed to international treaties such as the CBD and the Nagoya Protocol. Such commitment is revealed by Vietnamese policies on conservation and sustainable use of biodiversity such as the Law on Biodiversity (13 November 2008) and Decree No. 59/2017/ND-CP of 12 May 2017 on the management of access to genetic resources and benefit sharing arising from their utilization (henceforth Decree 59).

National framework on ABS and associated traditional knowledge

The Law on Biodiversity is the key statute which affirms national sovereignty over genetic resources and national responsibility for their conservation and sustainable use in Vietnamese territory. The law requires PIC and MAT through the provisions on access to genetic resources under Article 57. These orders and procedures include three basic steps: 1. Registering access; 2. Entering into written contracts on access and benefit-sharing with organizations, households or individuals assigned to manage genetic resources; and 3. Application for access permits. In compliance with the Law on Biodiversity and as part of fulfilling Nagoya Protocol obligations, the Government of Viet Nam promulgated Decree 59, which details scope, subjects of access and benefit sharing, orders and procedures, information and reports. Decree 59 also institutionalized the Ministry of Natural Resources and Environment and the Ministry of Agriculture and Rural Development jointly as the National Competent Authority in granting access permits.

ABS rules apply to genetic resources in Viet Nam whether native, wild or cultivated, with direct or indirect access, that is, access to plants directly or access to derivatives. This is because the ABS law of Viet Nam provides a definition of genetic resources which is different from the one of the CBD. It states: *"Genetic resources include all species and genetic specimens in nature, conservation zones, biodiversity conservation facilities and scientific research and technological development institutions and in nature"* (Clause 2, Article 3 of the Biodiversity Law), meaning the ABS law covers all biological resources in Viet Nam. For cultivated species, ABS rules apply to exotic species if these have been introduced in Viet Nam for a long time. ABS rules focus exclusively

on research and development activities which cover access to not only genetic resources but also derivatives. To clarify this scope, the Decree provides a definition for "utilization" which is interpreted from the Nagoya Protocol.

The legal framework regulating access to associated traditional knowledge and the sharing of benefits resulting from its use is still in early stages of development. Certain provisions exist, but are scattered in different legal documents. Moreover, most instruments do not deal with traditional knowledge directly or in a comprehensive manner. The Law on Biodiversity is the only legal document that directly mentions traditional knowledge. In addition to defining traditional knowledge, it encourages organizations and individuals to consider and apply traditional knowledge for the conservation and sustainable use of biodiversity. It also foresees "rights" over traditional knowledge and requests the Ministry of Science and Technology in collaboration with other relevant ministries and state agencies to provide guidelines for developing such a system. Nevertheless, the Law on Biodiversity does not include traditional knowledge in its ABS provisions. The only provision on benefit sharing for traditional knowledge requires accessors to share intellectual property rights on inventions that derive from copyrighted traditional knowledge. Further, the implementing rules also do not address traditional knowledge. Decree 59 on ABS only charges the Ministry of Environment and Natural Resources, in collaboration with relevant ministries and agencies, to formulate rules regulating ABS in relation to traditional knowledge. To date, no such rules have been established.





The benefits directed to the provider will be used to carry out activities such as:



financing community development projects (improving working conditions or life quality of local communities)



biodiversity conservation projects



enhancement of agricultural practices related to the genetic resource



training courses on farming techniques and sustainable harvesting



raising awareness about environmental protection and biodiversity conservation



A BIODISCOVERY CASE

Negotiating ABS agreements and learning about business models of industries that use genetic resources and traditional knowledge

In June 2017, BASF Beauty Care Solutions France SAS (hereinafter referred to as BASF) accessed a perennial plant (*Salvia miltiorrhiza*) in the Lamiaceae family from a local company who cultivates the plant, to carry out research on its properties with a view to develop a cosmetic ingredient.

Upon the entry into force of Decree 59, and based on its transitional provisions, an application was presented to regularize access to the genetic resources. In line with national requirements related to access and benefit-sharing as described below, a permit was granted for access to the resource for commercial purposes in April 2020. Decree 59, which entered into force on 1 July 2017, enabled organizations and individuals that accessed genetic resources between 1 July 2009 and 1 July 2017, and wanted to continue utilizing these resources, to register and request a permit in accordance with the requirements set out in the Decree and thus regularize their situation.

On 20 April 2020, the Minister of Natural Resources and Environment issued Decision No. 963/QD-BTNMT on the licensing of access to genetic resources for commercial purposes. Once the permit is granted, the ABS contract is effective and valid for a seven-year period. The sharing of benefits is addressed in the contract as follows:

The benefits directed to the provider will be used to carry out activities such as financing community development projects (improving working conditions or life quality of local communities), biodiversity conservation projects, enhancement of agricultural practices related to the genetic resource, training courses on farming techniques and sustainable harvesting and raising awareness about environmental protection and biodiversity conservation. The benefits directed to the State are to be used for biodiversity conservation projects.



IPLCs' capacities, Biocultural Community Protocols and SDGs impacts

The UNDP-GEF ABS Project in Viet Nam sought to develop and implement a national ABS framework, build national capacities and support an ABS agreement based on traditional knowledge and public-private partnerships. The Project is coming to its final stages with significant outcomes contributing to SDGs such that growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded.

One of the Project's components is to demonstrate private-public community partnerships on ABS at the pilot site. Living in the remote north mountainous areas of Viet Nam, the Red Dao ethnic group at Ta Phin commune, Sapa town, Lao Cai province depends heavily on natural resources for livelihoods but lacks awareness and skills for sustainable use of natural resources. Therefore, the Project chose the Red Dao group as a target of intervention. An *in-situ* conservation area has been established under the active participation of the Red Dao. Based on a five-year management plan, the local community plays the key role in conserving the biodiversity and forest, particularly for rare and precious medicinal herbs in the *in-situ* conservation area. The local people have been trained in sustainable collection, cultivation, intercropping and planting of new medicinal plants. They have also participated in forest protection and sustainable use of non-timber forest products in the pilot area.

In order to ensure a long-term effect of this model, a BCP to conserve biodiversity at the pilot site was developed and was approved in July 2020. This BCP will help to ensure rights and benefits of local people to use and manage forest resources, conserve natural forest ecosystems, protect and develop genetic resources and contribute to public health care and sustainable livelihood of the local community.

In addition, the Project has supported a local community company, Sapa Napro, to research and develop a new product based on native genetic resources and associated traditional knowledge of the Red Dao community in the Ta Phin commune. The research has been completed for testing the safety and efficacy of the product. In this process, two ABS contracts have been signed between Sapa Napro and a group of Red Dao people who are the traditional knowledge holders and providers of genetic resources. Furthermore, the Project has also supported development of a certification trademark for the bath remedies product of the Red Dao community and the Ta Phin People's Committee. The trademark is now being submitted to the National Office of Intellectual Property of Viet Nam. Once the product is commercialized, a part of the annual revenue from it will be shared with the group of Red Dao people to improve their income and ensure compliance with the ABS regulation.



A gathering of the Sapa Napro company in the Red Dao community



SDG 12
Responsible consumption and production

TARGET 12-2



**SUSTAINABLE
MANAGEMENT AND
USE OF NATURAL
RESOURCES**



SDG 15
Life on land

TARGET 15-1



**CONSERVE AND
RESTORE TERRESTRIAL
AND FRESHWATER
ECOSYSTEMS**

To preserve and develop traditional knowledge of indigenous people (Red Dao and H'Mong), the Project has documented traditional knowledge of over 100 herbal remedies in the Ta Phin commune. The documentation will help preserve precious traditional knowledge of the local community for dissemination to the next generation and community as well as contribute to the use of this traditional knowledge in daily health care.

The Project's private-public community ABS partnerships at the pilot site have contributed to Target 15.1 of SDG 15 in ensuring the sustainable use of the forest at the site as well as to Target 12.2 of SDG 12 on sustainable management and efficient use of natural resources.



Collection of herbal remedies in the Ta Phin commune



EYEWITNESS STATEMENT



... the deforestation has decreased and people no longer sneakily exploit precious species in the forest.



Through demonstration of pilot ABS agreements for bioprospecting activities in Lao Cai province, one of the objectives of the UNDP-GEF ABS Project "Capacity building for the ratification and implementation of the Nagoya Protocol on access and benefit sharing," 2017–2020 in Viet Nam was to provide experience and lessons to inform refinement of the framework and implementation processes including, as appropriate model PIC processes, and MAT and benefit-sharing mechanisms, as well as support the development of new cosmetic products from genetic materials.

Mr Ly Phu Chiu, head of the core team, who is a representative for the Red Dao local community where the pilot activities took place, acknowledged the importance of support from the Project for the local community. Mr Ly said that "before the Project was implemented, people mainly cultivated separately and deforested for cardamom cultivation. However, the Project has collaborated with local authorities to allocate land to the community, so that the deforestation has decreased and people no longer sneakily exploit precious species in the forest. The local community has been divided into groups to protect, build and care for nurseries of medicinal plants. The Project also provided support to research, develop and commercialize traditional spa products. The Project not only supported raising livelihoods but also protecting folk remedies of Red Dao local community."



MESSAGE FROM AN SDG ADVOCATE

“To fulfil Nagoya Protocol obligations, Viet Nam has promulgated Decree 59 and its guiding document on management of access to genetic resources and benefit sharing arising from their utilization. The issuance of Decree 59 plays an important role in creating a new arena that connects users and providers toward the goal of biodiversity conservation. Also, the ABS mechanism stipulated in Decree 59 aims at facilitating a fair and equitable sharing of benefits arising from utilization of genetic resources which will further support livelihoods for the local people who own genetic resources.

“However, the ABS concept in Viet Nam is novel to most of the stakeholders. While the ABS legislation framework has been completed, it needs detailed instructions to be implemented in practice. Therefore, the Government has developed and promulgated the Prime Minister’s Decision No. 1141/QĐ-TTg, dated 27 June 2016 on National scheme on strengthening capacity on management of access to genetic resources and fair and equitable sharing of benefits arising from the use of genetic resources in the period of 2016–2025. With the support of

the UNDP-GEF ABS Project, capacity-building and awareness-raising activities were conducted for relevant stakeholders to implement and comply with ABS regulations such as development of guidelines, intensive training, seminars and dialogues. At the same time, coordination was strengthened between the joint National Competent Authorities, which also played an important role in ensuring success of ABS implementation in Viet Nam.

“The Project worked to engage local communities with the ABS process through demonstrations of pilot ABS agreements for bioprospecting activities in Lao Cai province. Positive results included reducing overexploitation of forests and medicinal plants, enhancing the role of local communities in the process of negotiation on contracts for access to genetic resources and benefit sharing, and improving the livelihoods of local communities.”

DR HOANG THI THANH NHAN, Deputy Director, Nature and Biodiversity Conservation Agency and ABS Nagoya Protocol National Focal Point







CENTRAL AND EASTERN EUROPE



Albania

Belarus



REPUBLIC OF Albania

Approaching the Nagoya Protocol
by securing access to and use
of biological resources

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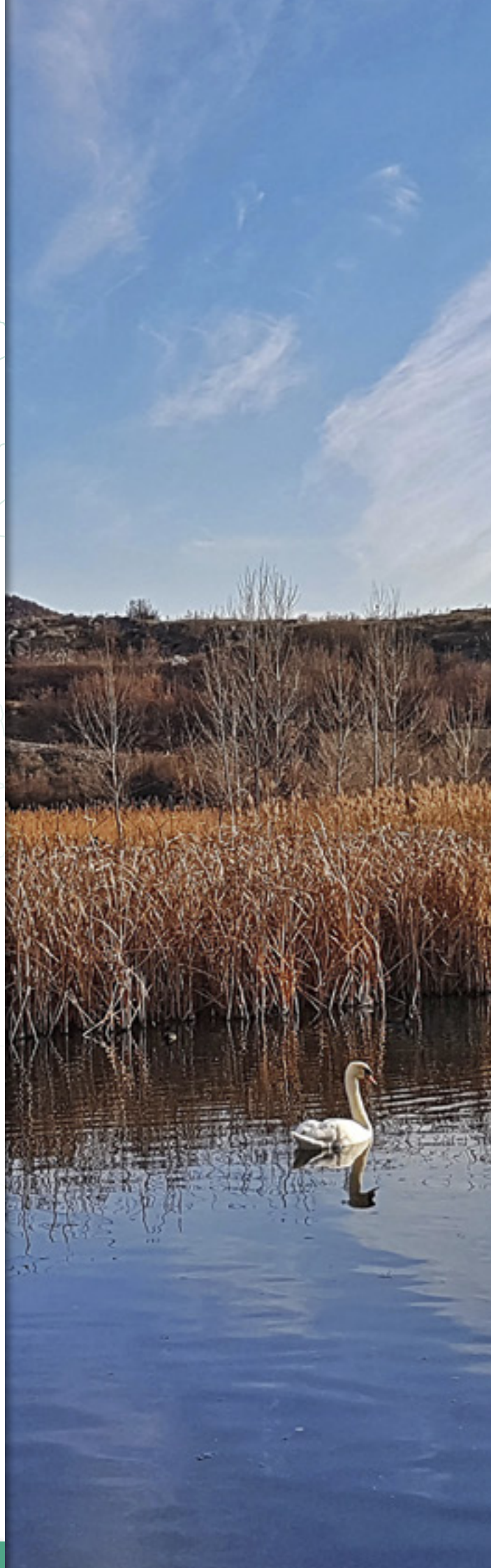
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SETTING THE SCENE



Albania is well known for its high diversity of ecosystems and habitats:



3,200

higher plants



800

fungi



1,200

diatoms



313

fish



323

birds



36

reptiles



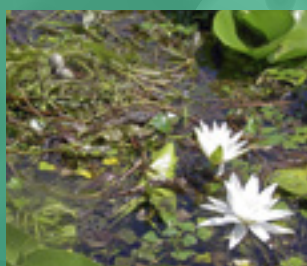
70

mammals



520

molluscs



Albania is a small Mediterranean country, which lies in the south-eastern part of Europe (western part of the Balkan Peninsula), along the eastern coast of the Adriatic and Ionian seas. It has an area of 28,748 km², of which 27,400 km² is terrestrial, mountains and hills comprise 76.6% of its territory. Despite its relatively small size, Albania is well known for its high diversity of ecosystems and habitats. Around 3,200 taxa of higher plants, 800 fungi, 1,200 diatoms, as well as 313 taxa of fish, 323 birds, 36 reptiles, 70 mammals and 520 molluscs have been identified so far. A total of 27 plant species, with 150 subspecies, are endemic to the country, and 73 vertebrate taxa and 18 invertebrate taxa have been identified as threatened with extinction.

Albania, owing to its very suitable geographic Mediterranean position, to its land characteristics and variable relief and to its very changeable climate, is characterized by a rich ecosystem of diversified flora. Out of 3,250 plant species present in Albania, it is estimated that about 700 species can be considered as plant genetic resources for food and agriculture. Currently, about 15 cereal crop species, 15 forage species, 35 vegetable species and 20 fruit-tree species are cultivated in the country. In addition to these agricultural species, medicinal and aromatic plants (MAPs), which are widely found in the country, comprise an important natural economic resource which is not widely and sustainably exploited. More than 300 species of MAPs belong to the wild Albanian flora. They are important natural and economic resources for the country. About 182 of these species are rather widespread and many of them are harvested and exported.

The issue of protection of traditional knowledge, innovations and practices, although addressed in principle by the national legal framework on biodiversity protection since 2006, is still being developed, particularly after Albania's accession to the Nagoya Protocol in 2014. However, in the last few years, appreciable progress has been made to attenuate pressure on the natural populations of medicinal and aromatic herbs by specifying limits to their harvesting.

National framework on ABS and associated traditional knowledge

Albania became a Party to the Nagoya Protocol on access to genetic resources and the fair and equitable distribution of benefits deriving from their use on 12 October 2014 and is the first country in the Region of Central Europe to adhere to this Protocol. Following the efforts to complete the national legal framework, on 23 April 2020, the Albanian Parliament approved Law no. 41/2020, *"On some changes and amendments in Law no. 9587,"* which amended Law no. 9587, dated 20 July 2006 *"On biodiversity protection."* Through this amendment, the Albanian legal framework regarding the full implementation of the Nagoya Protocol has advanced to fulfil all obligations deriving from this legal instrument. The enhancement of the law on biodiversity protection will continue in 2021 with the further elaboration of ABS bylaws that will ensure the completion of the legal framework for the Albanian ABS system and make it fully operational. The recently approved amendments to the law aim to identify and make operational the network of national authorities responsible for the implementation of the Nagoya Protocol in the country. Furthermore, they make it possible to establish mechanisms for obtaining PIC and establishing MAT among the providers, the users and the beneficiaries of local genetic resources. To this end, legal provisions have been included in the law for the benefit of local communities that provide local genetic resources.

The UNDP-GEF Global ABS Project *"Strengthening Human Resources, Legal Frameworks and Institutional Capacities to Implement the Nagoya Protocol"* in Albania has supported the Albanian government, through the Ministry of Tourism and Environment (MTE) as the key designated institution, with the view to enabling Albania to implement its obligations under the Nagoya Protocol. The Global ABS Project has supported the MTE, technically and

financially, to provide national and international expertise for developing the draft ABS amendments to the law on biodiversity protection, which also approximates Regulation (EU) No 511/2014 of the European Parliament and of the Council of 16 April 2014 on compliance measures for users from the Nagoya Protocol on ABS in the Union. According to the recently approved law, the provisions of PIC and MAT are introduced for the first time in Albanian national legislation. Moreover, provisions related to the detailed declaration of scientific research and the monitoring of the process are included.

The MTE is currently working on two decisions from the Council of Ministers that will ensure the full effectiveness of the law. At the same time, a series of administrative measures are being consolidated with the inclusion and creation of a national network of institutions working on the administration and management of genetic resources. As part of such institutional ABS infrastructure, a specific checkpoint will involve cooperation with the Customs authorities and the Ministry of Agriculture and Food.

A compliance mechanism and compliance monitoring system, which will be the driving force of the national ABS mechanism, are still in the process of development. Situations of non-compliance are addressed by general provisions of the above-named law *"On biodiversity protection"*. Despite constraints in human and financial resources, Albania has regularly reported and updated the information made available on the portal of the Global ABS CHM of the Nagoya Protocol. However, the lack of proper functionality of operational ABS procedures to this point as well as lack of electronic communication tools throughout the country hinder the use of the full potential of the ABS legislation in the country, especially by local stakeholders.



Biodiversity resources in Albania

The Albanian Alps are difficult to access and that is why they still hold the treasure of Albanian biodiversity. The landscapes, high peaks aiming at the sky, unpaved roads and icy water flows have been the protection for many endemic species that populate the habitats of the Albanian Alps. The Alps are located in northern Albania and are geographically isolated, with few road connections to neighbouring countries or to the rest of Albania. These mountains comprise the highest and most rugged and impenetrable massif in the country, with a unique natural beauty and great ecological value. The flora that grows in the Albanian Alps makes up for 43% of the country's total flora and is home to about 100 species of medicinal plants, as well as many species of relict and subendemic plants, of which unfortunately about 70 species are endangered or rare. Some of the rare plants are *Ranunculus hayekii*, *Ligusticum albanicum*, *Petasites doerfleri*, *Leontopodium alpinum* and *Viola dukadjinica*. Some rare plant species grow exclusively in a single place and are threatened with extinction, such as *Wulfenia baldaccii*, which can be found in Theth along the so-called Trail of Sheep, or *Sanguisorba albanica*, which can be found in an isolated area in northern Vermosh. Fruit trees in these higher elevations can usually be grown without the use of chemicals, which means that the fruits produced are of organic quality.

Local communities have maintained their traditional farming practices over the centuries, thus protecting local plant species and animal breeds that provide their livelihood. Cultivation of natural plant species and breeding of indigenous animal breeds have helped to mitigate negative impacts of agriculture on biodiversity as well as facilitating restoration and conservation of local ecosystems.

Currently the Albanian national inventory of base collections includes a total of 4,105 accessions. Out of these, 3,219 accessions are maintained as seeds under long-term conservation conditions at the National Gene Bank and the remaining 886 accessions are conserved in field collections.

Since ancient times, local communities have ensured their survival with ongoing animal breeding. According to specialist Fatmira Leka, based on the studies of the Agricultural Technology Transfer Centre: *"Albania has a genetic potential that relies mainly on indigenous breeds of small ruminants with good productive quality and resistance to environmental conditions and various diseases compared to commercial, widespread breeds. The observed trends, in the context of free trade with countries in the region and beyond, indicates that international trade based on these resources and the development of agritourism will be the drivers of development of the production system for indigenous breeds and ecotypes, and consequently farm sustainability."*

In the Albanian Alps, genetic resources in the form of indigenous breeds of cattle, sheep and goats can be found:

- Busha cattle (Ilyric dwarf cattle). Around 650 animals of this native breed can be found in the Nikaj-Mërtur Regional Nature Park. The distinctive Busha has a short body, sturdy build, reddish-brown coat, which is white around the mouth, and short-pointed horns. It weighs between 200 and 280 kg, and the cows produce 1,200 to 1,300 litres of milk per year.
- Bardhoka sheep. The Bardhoka is a sturdy breed of sheep with a strong bone structure. It has powerful jaws, a wide muzzle, large ears and strong legs. It has a white fleece and white hair on its head and legs. The rams have heavy, spiral horns. Sheep farms typically comprise 50 to 300 head of sheep, and the population is currently not endangered.
- Capore goat of Dragobia. The Dragobia goat is a typical alpine animal with medium body size, a well-developed skeleton and thin, strong legs. It has a black to ash-grey coat and backward-curving horns. This ecotype represents valuable genetic material in terms of agritourism and rural development in the area.

However, there is not enough public awareness in general, and in the farmers' communities in the Alps in particular, about the values of native/indigenous genetic pools. The low level of economic development of rural areas and inadequate financial resources of farmers also affects the implementation of programmes for conservation of native breeds at risk. The infrastructures, such as labs and human capacity, necessary for establishing a gene bank for *ex situ* conservation of these indigenous breeds are not in place.

Investigating the potential of local species for biodiscovery cases and ABS agreements

Medicinal and aromatic plants, which occur widely in Albania, constitute an important natural economic resource, not fully utilized nor utilized in a sustainable way. According to studies conducted by the Agricultural University of Tirana, the wild Albanian flora contains about 300 species of MAPs, 30 of which are endemic species. About 182 of these MAP species are widespread in Albania and are collected and exported. Sixty-eight species of MAPs are considered endangered and over 40 species of are listed in the Red List of Albania Flora and Fauna. Habitat changes throughout Albania have also destroyed populations of some species. In the last two decades, some species have been affected by the phenomenon of genetic erosion.

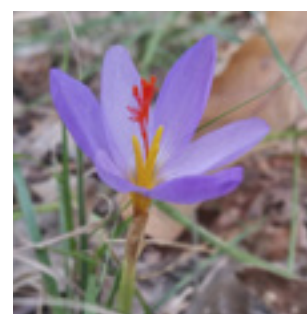
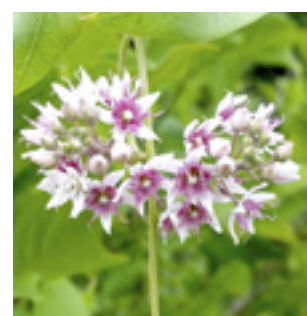
A major problem with MAPs collection involves early harvesting and harvesting of plants by removing the stalk. Eager to harvest as many MAPs as possible, the harvesters do not follow proper harvesting practices. Many unlicensed collectors buy herbs even if they are of poor quality. Without concern for quality, harvesters are thus motivated to gather herbs improperly, causing damage to wild populations.

Albania has a strong tradition in the production and export of MAPs. They have been and remain one of the main food products for export purposes; they currently occupy the second place in Albanian exports after vegetables. More than 50% of them are exported to EU countries, targeting Germany, followed by France and Italy, respectively 16% and 14%. Almost 75% of the sage imported by the USA in 2019 was of Albanian origin.

MAPs are an important source of income for many rural families, especially in mountainous areas in Albania. There are up to 100,000 people who directly or indirectly receive income from the collection and sale of these plants, about 20,000 families are engaged in MAPs collection and about 4,000 in cultivation. The main cultivated plants are sage, lavender and thyme. The main reasons for the involvement of farmers in MAPs cultivation are the support for cultivation provided by processors and exporters, high sector benefit and support from the government subsidy scheme.



The flora that grows in the Albanian Alps makes up for 43% of the country's total flora and is home to about 100 species of medicinal plants ...





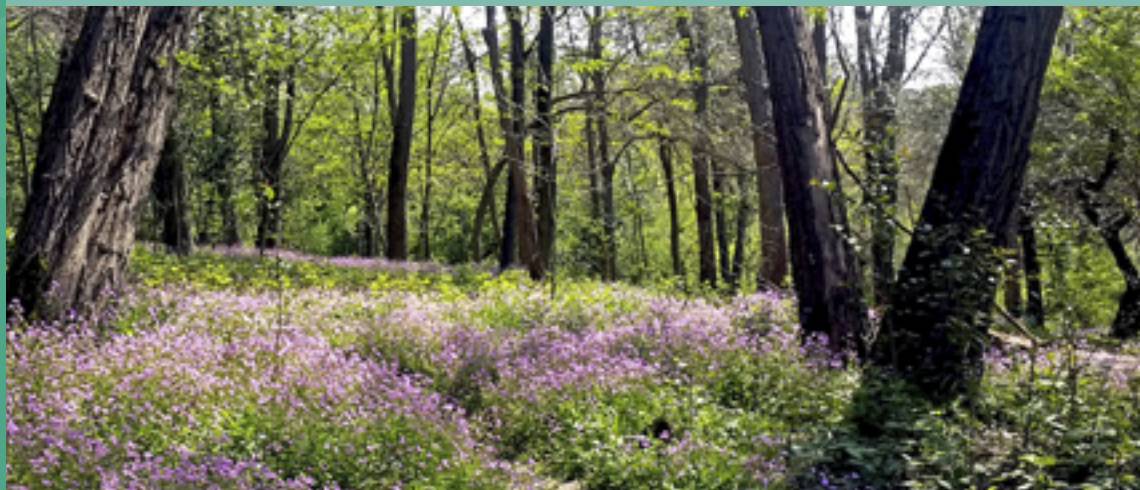
EYEWITNESS STATEMENT



Elvana Ramaj



... use of genetic resources and traditional knowledge related to them, is seen with a lot of interest ...



"Being engaged with the Nagoya Protocol on ABS since Albania acceded to it has enabled for me a diverse experience and the opportunity to participate in many national events to identify and discuss issues related to local genetic resources and the potential for benefits from the owner of these genetic resources and the traditional knowledge related to these genetic resources. Since there is still no developed ABS agreement in the country, the case I will present is related to the presentation of legal provisions in Law 41/2020, during consultations with the public and interested stakeholders of the draft and specifically the articles dedicated to ABS agreement, PIC and MAT. In the northern part of the country medicinal plants and herbs used as spices are found in the wild in a considerable area. Placing the provisions required by PIC and MAT for the first time in the national legal framework, providing the possibility of local community negotiations for the use of these genetic resources with their users, such as exporting companies or pharmaceutical companies that develop various products, is a first innovation with a lot of interest from local communities and interest groups. Through the Global ABS Project in Albania, workshops have been conducted throughout the country to get acquainted with the provisions of the Nagoya Protocol by local communities identified for specific genetic resources and values that they possess, as well as with local NGOs operating in certain areas of the country that have experience with exploitation of local genetic resources. Of all the aforementioned stakeholders, the process of completing the legal framework and their familiarity with the details of the procedures that pave the way for implementation and the functioning of PIC and MAT for the use of genetic resources and traditional knowledge related to them, is seen with a lot of interest, with the entry into force of the new Law in May 2020."

ELVANA RAMAJ, Focal Point for Nagoya Protocol, Ministry of Tourism and Environment, Head of Project Designing on Nature and Biodiversity Protection Unit, Albania





MESSAGE FROM AN SDG ADVOCATE

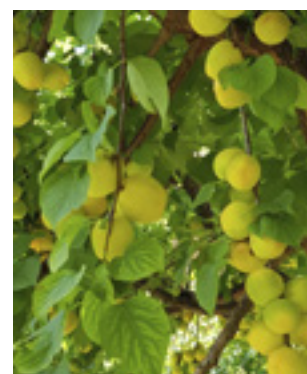
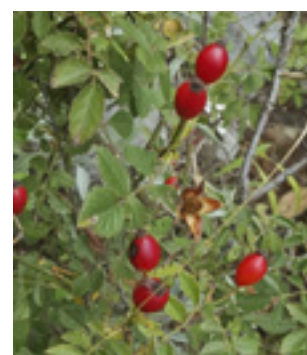
"As the coordinator of the SDG process for the Ministry of Tourism and Environment and at the same time as the CBD focal point, my experience with ABS project implementation in Albania has brought some moments that can be shared on this occasion. A series of meetings organized throughout the 12 districts of the country, in cooperation with Regional Administrations for Protected Areas during 2019, with the involvement of environmental civil society organizations and businesses dealing with genetic resources. One of the discussion points was addressing the clear division of responsibilities between the Ministry of Tourism and Environment and the Ministry of Agriculture and Rural Development, in order to ensure the active participation of genetic resources provider(s) and their active participation in the process. In the Korça district, people were eager to know how to proceed with the negotiations process for the agreement on ABS framework. In the Vlora district meanwhile, which has a Marine Protected Area, interest was expressed for the specific issue of traditional knowledge.

"The establishment of a fruitful cooperation with the gene bank experts was a key point to ensure success in the project implementation. Capacity building of human resources of all government institutions involved was crucial and the challenges of a functional national network on ABS were overcome after several explanatory meetings with the facilitation of project staff and experts. Through the Global ABS Project, the legal framework for access and benefit sharing has been developed in consultation with the national Nagoya Protocol Focal Point. The adoption of legislative, administrative and policy frameworks in April 2020 has made possible the achievement of Target 15.6 of SDG 15– Life on Land, specifically: Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed. The project greatly supported the MTE, not only for the development of the national legal framework, but also with numerous capacity building workshops for national and local experts focusing on ABS concepts and obligations for Albania under the Nagoya Protocol."

KLODIANA MARIKAJ, Coordinator of the SDG process for MTE, Designated CBD National Focal Point, Director of Development Programmes on Environment, MTE, Albania



Klodiana Marikaj



SDG 15
Life on land

TARGET

15.6



**PROMOTE ACCESS TO
GENETIC RESOURCES
AND FAIR SHARING OF
THE BENEFITS**



REPUBLIC OF Belarus

Building the commercial potential
of genetic resources under
the Nagoya Protocol

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SETTING THE SCENE



In 2019 Belarus exported animal products, chanterelles, berries as well as plants and their parts for use in perfumes and pharmaceuticals ...



The Republic of Belarus is a country in Eastern Europe with a population of 9.4 million people. In the past 20 years, it has moved into the category of urbanized countries as 77% of its population lives in cities; about 2 million people live in Minsk, the capital of the Republic. At the same time, Belarus is a country with an impressive natural potential and heritage. Over 60% of its landscape is covered by natural complexes and ecosystems, comprising wetlands, inundated territories, forests, kame moraine and lakes. These are some of the rarest European landscapes. Wetlands, extensively drained in the 20th century, have increased in recent years due to rewetting.

As a measure of the status of native plants, fungi and animals in Belarus, 2.5% of all plants and fungi and 1.2% of the total diversity of animals are listed in the National Red Book of Belarus. To date, there are 10 genetic banks and biological collections recognized by the Belarusian Government as National Heritage. The largest are within the National Academy of Sciences of Belarus: the Genetic Bank of Plant Genetic Resources of the Scientific and Practical Centre for Arable Farming (64.1 thousand samples, 1,680 cultivated species and wild relatives, including 13,570 genotypes of field crops, 5,166 samples of fruit, berry, nut crops and grapes, and 1,425 samples of forest plants) and the Republican DNA Bank of Human, Animals, Plants and Microorganisms of the Institute of Genetics and Cytology (total 15.2 thousand samples, 3,090 from animals including 177 samples of 10 rare species and 3,448 from plants including 625 samples of 77 rare species).

The collection of plant genetic resources of the Central Botanical Garden of Belarus totals more than 76.5 thousand samples. It is a strategic resource and provides the basis for the sustainable production of these crops. Samples of Belarusian origin make up 46% of the collection. The largest share (43%) is composed of grain samples and 20% are legume samples. In 2019, Belarus exported animal products used in pharmaceuticals with a value of US\$1.873 million, chanterelles (fresh or chilled) – for \$28.9 million, berries (European bilberry, lingonberry and cranberry) with a value of \$2.8 million, plants and their parts (including seeds and fruit) used in perfumes and pharmaceuticals with a value of \$3.24 million.

Based on the experience of Belarus related to the transfer of genetic resources, the lines and varieties of agricultural plants developed by Belarusian scientists, as well as the genetic material of rare and endangered species, are of interest for foreign partners. Normally, genetic resources were

transferred to foreign partners for scientific research for non-commercial purposes. However, at the onset of 2020, access was granted for the first time to the genetic resources of common bilberry for the study of its properties and possible subsequent commercialization in the cosmetic sector.

National framework on ABS and associated traditional knowledge

The development of the national legal framework for access to genetic resources and the fair and equitable sharing of the benefits arising from their utilization was carried out in 2018–2019 as part of the UNDP-GEF Global ABS Project based on the expert analysis of the legislation in force in the Republic of Belarus while considering the approaches of other country Parties. Proposals for amendments and additions to the national legislation in force to implement the Nagoya Protocol were submitted both to the Ministry of Natural Resources and Environmental Protection (the Ministry of Nature) and the Ministry of Culture of the Republic of Belarus. The amendments included, inter alia, proposals for the existing Code of Culture to include the term “traditional knowledge.” These proposals are still at the stage of discussion and consideration by the Ministry of Culture. Options for the proposed ABS legal framework were discussed and finalized during workshops and round tables organized together with interested organizations.

Based on the project outcomes, it was decided together with the Competent National Authority (the Ministry of Nature) to develop a draft Law “On Genetic Resources Management” of the Republic of Belarus, which will include the main provisions for access to genetic resources. In April 2020, the concept of the aforementioned Law was directed to the National Centre of Legislation and Legal Research of the Republic of Belarus. It was also directed to stakeholders for coordination. The Law will regulate relations involving the utilization of genetic resources obtained from wild species in their natural habitat (*in situ*), as well as genetic resources conserved under special conditions created by humans (*ex situ*) – varieties and lines of agricultural crops, scientific collections, botanical gardens, arboretums. Regardless of the type of a genetic resource and its intended use, the access procedure shall be carried out with the assistance

of the National Coordination Centre on Access to Genetic Resources and Benefit-Sharing (ABS NCC).

The provider of genetic resources (an organization or institution in the territory of the Republic of Belarus) or their potential user (an organization or institution located outside the Republic of Belarus) shall contact ABS NCC in any convenient way (telephone, email or in person) and complete an application (in either Russian or English or both) to obtain access to genetic resources, thereby providing basic information about the requested genetic resource, its intended utilization and contact information of the applicant.

ABS NCC shall review the application and advise the applicant on the procedure for obtaining access to a genetic resource, assist in concluding contracts or agreements with MAT for sharing benefits arising from the utilization of genetic resources and bringing the terms in line with the provisions of the Nagoya Protocol. If necessary, ABS NCC shall provide the applicant with model clauses of MAT and assist in preparing a supplementary agreement to the contract (such as a cooperation agreement).

After concluding and signing an agreement in compliance with the provisions of the Nagoya Protocol, ABS NCC shall apply to the Ministry of Nature to obtain a permit for access to genetic resources on behalf of the user. Following the consideration of the submitted documents, the Ministry of Nature shall decide whether to issue a permit or not. A permit for access to genetic resources issued by the Ministry of Nature shall confirm as follows:

- conclusion of MAT
- consent to allow access to the requested genetic resource
- compliance with the provisions of the Nagoya Protocol by Parties.



Since the 1980s, Seppic has been purchasing wild-growing bilberries in Belarus and producing cosmetics using an extract obtained from them.



Ripe fruit of bilberry

In the case of a positive decision to grant a permit for access to genetic resources, the ABS NCC shall enter relevant information regarding the permit into the ABS CHM of CBD, which automatically generates an IRCC, thereby confirming the legality of the genetic resource transfer, and automatically sends it to the provider, the user, the Competent National Authority in Belarus (the Ministry of Nature) and ABS NCC. The ABS NCC website, which functions as the National Clearing House, and an interactive database developed to monitor the utilization of genetic resources will also ensure the liaison among the Competent National Authority in Belarus, ABS NCC and the providers and users of genetic resources. The establishment of a State Fund coordinated by ABS NCC is planned with a view to accumulating and sharing the monetary benefits derived from the utilization of transferred genetic resources. Benefits derived from the utilization of genetic resources of wild species in natural habitats (*in situ*) will be directed by the Fund to the conservation of biological diversity. Benefits arising from the utilization of genetic resources preserved under special conditions (*ex situ*) created by humans (e.g., new lines and varieties of agricultural plants) will be obtained by the owners (providers) of such resources and some of them will be transferred to the Fund and then directed to the conservation of biological diversity.



A BIODISCOVERY CASE

Negotiating ABS agreements and learning about business models of industries that use genetic resources/traditional knowledge

Before the adoption of a relevant legal framework, the Republic of Belarus transferred genetic resources to foreign users based on the provisions of the Nagoya Protocol. To date, 9 transfers have been realized: USA (3 transfers), New Zealand, Russia, Canada, Lithuania (2 transfers) and France.

In May 2020, Belarus and France signed for the first time an agreement for the utilization of genetic resources of bilberry or European blueberry (*Vaccinium myrtillus*, Ericaceae), with good potential to become a commercial product if the planned research and development are successful. In France, the partner is Seppic, which is a company that pursues products in five categories: beauty care ingredients (developing ingredients for inspiring, safe and effective cosmetics), dietary supplements (innovating for the dietary supplements market), pharmaceuticals (developing new pharmaceutical forms), animal health (protecting animals to preserve human health), and performance materials (providing solutions to all industrial sectors). Since the 1980s, Seppic has been purchasing wild-growing bilberries in Belarus and producing cosmetics using an extract obtained from them. Some of the derived products thereby developed by Seppic were also patented in the targeted markets.

However, following the entry into force of the Nagoya Protocol in Belarus, the company representative contacted ABS NCC to obtain legal access to the genetic resources of wild-growing bilberry, since it became necessary to conduct additional studies to identify other promising properties of the plant and their possible use in developing new cosmetic products. A draft agreement was prepared by ABS NCC based on the previous experience of Belarus in the transfer of genetic resources. The text of the agreement was elaborated by taking into account possible commercialization of the research results (in case new useful properties of bilberry were identified). It was further checked and approved by the lawyers of the user of genetic resources and signed by both Parties. The agreement specifies the terms “genetic resource”, “utilization/use” and “commercialization” in relation to genetic resources, the time period to notify the provider of the receipt of research results by the user, and the time period to direct an offer to conclude a new agreement for commercial use.

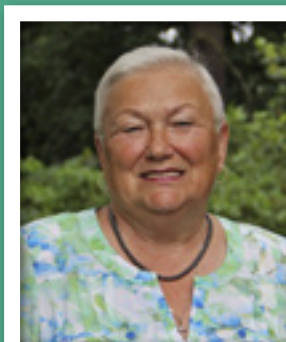


“It was not easy for us to formulate an agreement, which may subsequently become the basis for the Belarus’s first agreement on the commercial use of the genetic resource, although it does not yet include benefit-sharing provisions. We were kindly provided with the ‘Example Contract Tool for Samples without Declared Immediate Commercial Intention’ by Associate Professor Morten Walløe Tvedt at the Regional Training on Negotiating and Drafting ABS Agreements under the Nagoya Protocol (which took place in Dushanbe, Tajikistan, 20–22 November 2019. Thanks to the fruitful collaboration with the Project Coordinator of Seppic and the use of the provisions from the sample contract tool, we were able to prepare a draft that the French side accepted and left almost unchanged. In addition, Seppic kindly allowed us to provide the text of the agreement for the analysis and use within the framework of the Global ABS Project. The approaches used in that case provide an important practical experience for Belarus, which we could apply in developing the draft concept of the Law ‘On Genetic Resources Management’.”

MS ELENA MAKEYEVA, Associate Professor, Head of ABS NCC, ABS NFP in Belarus

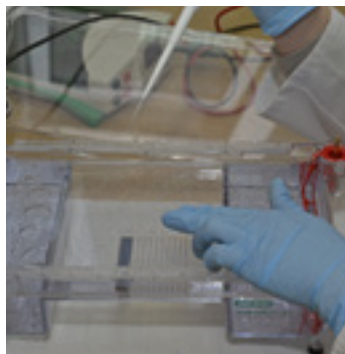
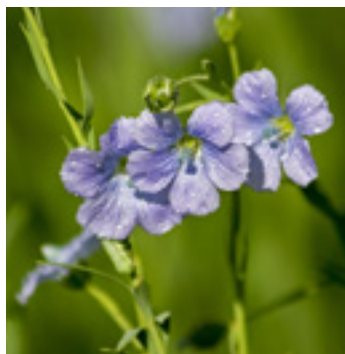
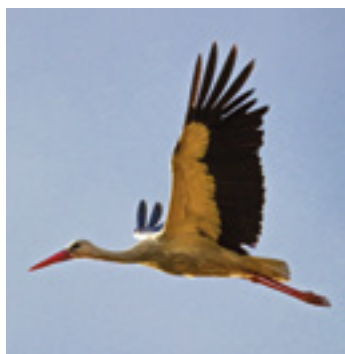


EYEWITNESS STATEMENT



Ms Elena Makeyeva





IPLCs' capacities and SDGs impacts

In Belarus, as in most urbanized European countries, there are no indigenous communities, ethnic groups, or tribes whose traditional way of life is related exclusively to the utilization of biological and genetic resources as their only source of subsistence and sustenance. Nevertheless, Belarusians as a nation have accumulated a rich layer of traditional knowledge based on the use of a variety of local genetic resources.

For centuries, such knowledge has been passed on from generation to generation and in most cases verbally. As a rule, traditional knowledge holders are persons belonging to the local community or closely located to it with distinctive abilities, skills, knowledge and characteristics. They are mostly villagers, who, on the one hand, continue the local tradition by practising it as it was in the past and, on the other hand, enhance such knowledge by using different sources – from appealing to scientific and popular literature and the mass media.

In the framework of the Global ABS Project, the Department of Folkloristics and Culture of Slavic Peoples at the Centre for the Belarusian Culture, Language and Literature Research of the National Academy of Sciences of Belarus, has carried out comprehensive activities on the collection and study of traditional knowledge of Belarusians related to traditional medicine, pharmacology, botany, zoology and food culture. Historical and ethnographic literature has been investigated, a number of field expeditions have been conducted, and a database has been designed. Audio-visual materials obtained during these expeditions, containing interviews with traditional knowledge holders, are very important from the standpoint of scientific and cultural research and they are stored at the National Academy of Sciences.

One of the project outcomes was the publication of the collective monograph "Plants in the System of Traditional Knowledge of Belarusians", in which folklore and folk recipes are analysed for the first time by the authors from the point of view of searching for and isolating traditional knowledge related to the utilization of plant genetic resources of Belarusians. With regard to traditional knowledge associated with the use of animal genetic resources, experts have also collected a large amount of materials that will be finalized and form the backbone of the second volume of a book on the traditional knowledge of Belarusians.

With a view to preserving and transmitting authentic traditional knowledge associated with genetic resources, proposals for amendments to the existing Code of Culture have been submitted. They are aimed at the development and integration into the national legislation of provisions that would define the term of "traditional knowledge" and the legal status of its holders, raise the social prestige and status of the institution of folk herbalists and healers, and contribute to the sustainable development of local communities (SDG 11) in the rural areas of Belarus.



SDG 11
Sustainable cities and communities



MESSAGE FROM AN SDG ADVOCATE

"Participation in the Global ABS Project has become invaluable experience for all of us and from multiple perspectives. We were able not only to engage a wide range of motivated people and introduce them to the Nagoya Protocol, but also create a group of enthusiastic like-minded experts in the field of genetics, folkloristics, ethnography, cultural studies and linguistics, and this allows us to speak about the long-term effect of the results obtained.

"An essential prerequisite for the success of the project was the format of its national execution – the Institute of Genetics and Cytology, National Academy of Sciences of Belarus, which carried out the project, is the National Coordination Centre on Access to Genetic Resources and Benefit-Sharing and has the greatest competence in access to genetic resources in our country. This has allowed us to choose our own unique approach to the project implementation, which has allowed us to:

- *attract highly qualified specialists from the field of science and public administration; to select experts and specialists with a clear vision of the activities that will be the most effective to address the tasks at hand;*
- *focus on the DNA identification of species as an innovative technique for inventorying genetic resources and building trust between the providers and users of genetic resources, by taking full advantage of the Institute's highly qualified personnel and modern equipment.*

"For the first time in Belarus, much has been done to collect traditional knowledge associated with genetic resources, contributing to their systematization and analysis, but still much is left to be done in this direction and we intend to continue this work."

MR ALEXANDER KILCHEVSKY, National Coordinator of the Project "Strengthening of human resources, legal frameworks and institutional capacities to implement the Nagoya Protocol in the Republic of Belarus", Academician, Professor, Deputy Chairperson of the Presidium of the National Academy of Sciences of Belarus



Mr Alexander Kilchevsky



... in Belarus, much has been done to collect traditional knowledge associated with genetic resources, contributing to their systematization and analysis ...







LATIN AMERICA AND THE CARIBBEAN



Argentina

Colombia

Ecuador

Honduras

Panama

Uruguay



Argentine Republic

Promoting implementation
of the Nagoya Protocol in the cosmetic
and pharmaceutical industries

Authors

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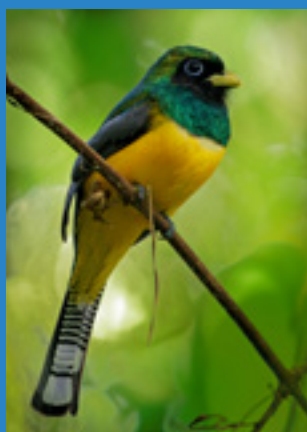
*Project Coordinator,
National Ministry of Environment and
Sustainable Development*







SETTING THE SCENE



The list of identified organisms in Argentina includes species, subspecies, varieties and forms of:



11,067

vascular
plants



1,034

birds



409

mammals



177

amphibians



1,002

fish



Argentina is the southernmost country in the world, encompassing 2.78 million km² in area and a rich biodiversity scattered within 18 ecoregions, including rainforests, tropical and subtropical forests, meadows, temperate grasslands, steppes, savannahs, shrub lands, wetlands and marine ecosystems, among others. The list of identified organisms includes 11,067 vascular plant taxa (species, subspecies, varieties and forms), 1,034 native species of birds, 409 mammal species, 177 species and subspecies of amphibians and 1,002 species of continental and marine fish, according to the 2019 Report on the State of the Environment of Argentina published by the Ministry of Environment and Sustainable Development. This privileged natural richness added to the booming national scientific and technological sector and the existence of more than 1,700 indigenous communities provides an unsurpassable context for the potential use of genetic resources and derived products under the Nagoya Protocol, many of them already under investigation and in different phases of development based on shrubs, mammals, microorganisms and fungi, to name a few.

National frameworks on ABS and associated traditional knowledge

Argentina has been a member of the CBD since 1995 and has had an active role in the protection of its natural resources. The Nagoya Protocol was ratified through National Law n° 27.246 and entered into force on 9 March 2017. Before this international treaty was ratified, there was no national regulatory framework on ABS, and each province was able to rule on access and use of natural resources according to its own perspective and provincial constitution. Argentina is a democratic state, consisting of 23 provinces and the autonomous city of Buenos Aires, which is the nation's federal capital. According to the National Constitution, the provinces have jurisdiction over their natural resources and are therefore entitled to their regulation. Nevertheless, provinces are required to respect international law ratified by Congress, which preempts national laws and the national legislation on minimum standards for environmental protection.

Based on the work undertaken for the implementation of the Nagoya Protocol, in 2019, Argentina approved a national regulation on ABS that allowed the country to start complying with the basic obligations of the Nagoya Protocol, establish minimum standards for provincial jurisdictions and start to issue IRCCs. This new law on ABS and its associated Resolution (410/2019) stipulate that access to genetic resources for their use will be subject to PIC and the establishment of MAT, in accordance with the provisions of the Nagoya Protocol. The Resolution contains a glossary that helps to provide clarity and legal certainty on the meaning attributed to specific terms used in the legal text, and clearly establishes the scope of application, setting out the exclusions to the regime. The Resolution establishes a simplified regime for noncommercial research on biodiversity and its components, which facilitates the scientific development necessary to improve knowledge and provide an information base for the sustainable use and conservation of biodiversity. Also, in compliance with article 8 of the Nagoya Protocol, the simplified regime applies to present or imminent emergency situations that create threats or harm to human, animal or plant health.

The Resolution determines the procedure for issuing IRCCs. In terms of surveillance, it creates the National Monitoring Board for genetic resources as a coordination and articulation body to support compliance and increase transparency on the use of genetic resources, which is made up of the national bodies linked to the management of genetic resources and their use. Finally, this Resolution allows regularization for those who have used or are using genetic resources for commercial purposes or for noncommercial research without having the corresponding access authorizations, in order to obtain the IRCC.

UNDP, with funding from the Nagoya Protocol Implementation Fund, has provided institutional support to the Government of Argentina by building institutional capacities and strengthening the national regulatory framework for the implementation of the Nagoya Protocol through the UNDP-GEF ABS Project entitled *"Promoting the application of the Nagoya Protocol on ABS in Argentina"* (hereinafter Nagoya Protocol Project). The role of the Nagoya Protocol Project has been substantial for the implementation of activities and institutional processes. One of the main characteristics of the Project has been its federal perspective, promoting the participation of representatives of all 24 provinces and the National Parks Administration. Through a series of workshops and technical training modules promoted by the Project in support of the National Ministry of Environment and Sustainable Development, officials from the provincial natural resources agencies were trained not only on the impact and scope of the new national law, but also on the Nagoya Protocol itself and the implications of its implementation. After three years, 200 officials received formal training and more than 30 workshops were held nationwide.

Experts were hired to work on ABS, capacity-building activities were financed, and a pilot experience was coordinated that allowed the generation of inputs for the regulatory proposal and the strengthening of the national scientific sector. However, it is also important to highlight the role of the National Ministry of Environment and Sustainable Development in internalizing and institutionalizing ABS. It is clear that for this type of project to meet its objectives, institutional support from the regulatory authorities is essential. In a federal country like Argentina, the role and importance of provincial partners is also vital. Without their support and active participation, the implementation of local activities and pilot cases would not be possible.



BIODISCOVERY CASES

Negotiating ABS agreements and learning about business models of industries that use genetic resources and traditional knowledge

The jarilla (*Larrea divaricata*, Zygophyllaceae), a plant species found in arid regions of northwestern and southern Argentina as well as in Bolivia, Chile and Peru, has traditionally been used by indigenous communities as an anti-inflammatory as well as bronchial- and intestinal-soothing substance. Jarilla has numerous properties and characteristics, some of them described as early as 1882 by the Argentine botanist Jorge Hieronymus. Nowadays it is widely used in popular medicine and has caught the attention of the pharmaceutical industry.

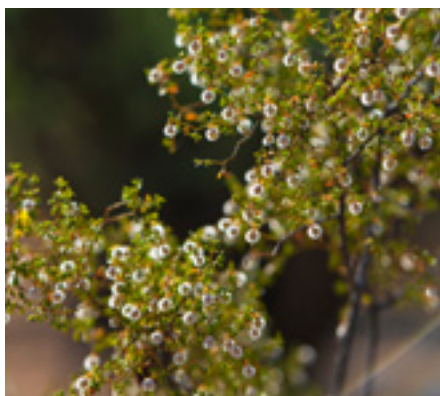
Through its Institute of Drug Chemistry and Metabolism, the National Council of Scientific and Technical Research of Argentina conducted a series of studies concluding that the aqueous extract obtained from the leaves of jarilla has anti-inflammatory properties and antioxidant effects and produces an increase in hair growth. This last characteristic suggests potential value for the development of products for the treatment of alopecia.

Until 2019, raw material of jarilla was collected and obtained without proper permits and in an artisanal and unsystematic way, generating uncertainty in the production process, which was reflected in uneven and uncontrolled results. Following the ratification of the Nagoya Protocol through National Law n° 27.246 and with the support of the Nagoya Protocol Project, this situation was reversed, leading to several mutual benefits. The dissemination, awareness and capacity-building activities carried out by the Nagoya Protocol Project were key elements in raising awareness among different sectors on the importance of the issue and the opportunities offered by ABS. Moreover, the work carried out by the Project and the National Ministry of Environment and Sustainable Development, which involved all jurisdictions and the scientific and private sectors, has made it possible to strengthen the possibilities for coordination and

articulation, bringing parties together so that projects are carried out under the provisions of the Nagoya Protocol, putting a value on biodiversity and generating benefits for all parties involved.

It was under this new strengthened scheme and after extensive technical work by the National Ministry of Environment and Sustainable Development and the province of La Rioja that the first IRCC was granted to the Garré Guevara Laboratories (ABSCH-IRCC-AR-249004-1–*Internationally recognized certificate of compliance constituted from information on the permit or its equivalent made available to the ABS Clearing House*), with a subsequent permit issued for the sustainable wild collection of organic jarilla for its use in the cosmetic industry. The country and province are benefiting, since they can grant formal authorizations for the utilization of genetic resources, and private actors are also reaping positive impacts, given the fact that they are now working in a formal context to commercialize a specific product to treat alopecia that uses jarilla as the raw material. This new context with a strong regulatory framework is a safeguard for all actors involved, from providers to users, ensuring the sustainable use of this specific natural resource. In general terms, the agreement between the providers and the users of this specific genetic resource provides guidelines for:

- Implementing a standardized method of wild harvesting and leaf drying, considering seasonal variables and the conservation of the biological resource
- Obtaining the organic certification of the input (dry jarilla leaves)
- Promoting job creation and labour guidelines in the geographical region where the jarilla is harvested
- Sharing the monetary benefits obtained from the commercialization of products derived from the use of the genetic resource
- Promoting the conservation of the resource.

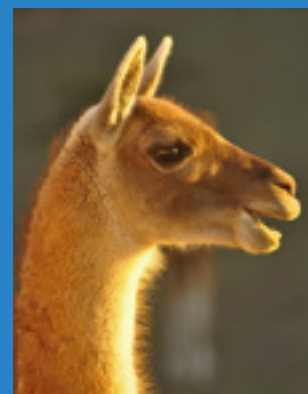


As a result, the producers that collect the plant are able to have employment with fair wages. Furthermore, training was provided on knowledge about the jarilla plant itself and a management plan was prepared for sustainable harvesting.

By implementing the Nagoya Protocol Project, the National Ministry of Environment and Sustainable Development played an important role in developing institutional capacities at the national and provincial levels and acknowledging the fundamental role of traditional knowledge in genetic resource-based product innovation, as well as in efforts towards biodiversity conservation. Many tangible outcomes have emerged, including laying the groundwork for a bold national regulatory framework for accessing and protecting natural resources, in compliance with national priorities and in support of the implementation of the national law on the Nagoya Protocol.

The Nagoya Protocol Project also worked on a case study for the development of molecules for biotechnological application against the group A rotavirus, which is the main viral agent responsible for paediatric diarrhoea, utilizing genetic resources from the camelid guanaco (*Lama guanicoe*, Camelidae). This case study is being carried out in Chubut Province, which is rich in natural resources and possesses unique ecosystems and genetic resources, to develop a treatment against paediatric diarrhoea. To provide some perspective on the importance of this research, rotavirus causes 1,300 cases of diarrhoea per day and 200,000 annual deaths in children under five years of age. This valuable research is ongoing with the view to promoting monetary and nonmonetary benefits derived from the marketing of a potential treatment or a pharmaceutical product. As of the date of the writing of this article, research and development activities are ongoing and progress is being made. An anti-diarrhoeal product has not been developed because the guanaco nanobody that can neutralize the illness has not yet been identified. However, it should be noted that the team is also working on a product against Covid-19, taking advantage of the capacity built and supplies and equipment acquired.

One of the lessons learned from these cases is that collaborative work is an essential element for ABS, more so if we are in the early stages of implementation. Beyond the theory, the study and the technical work carried out, reality teaches us that we learn with every new case using genetic resources.



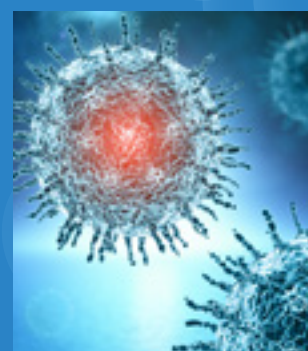
Guanaco



Jarilla (*Larrea divaricata*, Zygophyllaceae) is widely used in popular medicine and has caught the attention of the pharmaceutical industry ...



... genetic resources from the camelid guanaco used in a case study for the development of molecules for biotechnological application against the group A rotavirus ...

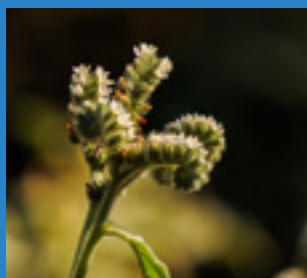




EYEWITNESS STATEMENT



Micaela Bonafina



... we seek to generate the inputs and conditions necessary to enhance research and development activities using genetic resources ...



"This jarilla case constitutes the first IRCC published by our country in the ABS Clearing House (ABSCH). I remember perfectly that day when after checking the time difference, calling Montreal several times asking for guidance, checking and re-checking the form, and talking to all the parties involved, we were able to finish the data upload in the ABSCH. We were so happy with this special event that together with co-workers Julieta Ansaldi and Rocio Laiz Quiroga, we decided to take a selfie to commemorate that moment, because in this IRCC we finally saw the materialization of three years of work in coordination with key stakeholders.

"The province of La Rioja was involved with this issue from the beginning. The Garré Guevara Laboratories company demonstrated a commitment and willingness that deserves to be highlighted, which made things much easier. As Nagoya Protocol Project coordinator, I supported and accompanied the process from the very beginning, and I can only hope that all countries will have providers and users so committed and determined to contribute to the common good, each coming from their own perspective.

"This IRCC is the result of efforts towards the effective fulfillment of the three objectives of the CBD and demonstrates the interrelationship between conservation, sustainable use and ABS. The Nagoya Protocol implementation processes have involved institutional capacity-building activities at national and subnational levels, efforts to raise awareness and disseminate the relevance of ABS (in this case with the national scientific sector and the private sector) and the strengthening of ABS regulatory frameworks. With this work, we seek to generate the inputs and conditions necessary to enhance research and development activities using genetic resources, placing value on our biodiversity, safeguarding the rights and interests of indigenous people and local communities, and ensuring that the benefits obtained from the use of genetic resources are distributed in a fair and equitable manner."

MICAELA BONAFINA, Project Coordinator, UNDP Argentina Country Office



MESSAGE FROM AN SDG ADVOCATE

"Agenda 2030 & the Nagoya Protocol implementation are key elements to build nature-based solutions for biodiversity conservation and addressing climate change. The experience in Argentina has led to new steps being taken for the conservation and sustainable use of biodiversity as well as the valuation of ecosystem services, considering the equal and fair distribution of benefits from genetic resources and associated traditional knowledge. The implementation of the Nagoya Protocol and associated access and benefit sharing provisions will contribute to the achievement of various Sustainable Development Goals, including poverty alleviation (SDG 1), food security (SDG 2), good health and well-being (SDG 3), gender equality (SDG 5), innovation (SDG 9) and life on land (SDG 15). The implementation also supports the building of national and international partnerships (SDG 17) needed to promote all the SDGs.

"The Nagoya Protocol Project in Argentina has been making progress in capacity-building activities at the national and provincial level with the relevant involvement of the different jurisdictions. It has demonstrated the importance of collaborative work and of the interplay between capacity building, awareness and policy frameworks. In addition, the Project supported the ABS legal framework and institutional strengthening with a specific National Resolution of the National Ministry of Environment and Sustainable Development that regulates access to genetic resources and certification (with international standards). Within this context, a specific IRCC constituted from information on the permit or its equivalent made available to the ABSCH was granted for the sustainable wild collection of organic jarilla for its use in the cosmetic industry.

"As UNDP we have the privilege of working in partnership with the national and provincial authorities to catalyse the participation of different governmental as well as sectoral actors, communities and other stakeholders and we consider biodiversity and ABS as key pillars in order to achieve an inclusive, fair and sustainable development."

MARÍA EUGENIA DI PAOLA, Environment and Sustainable Development Coordinator,
UNDP Country Office Argentina



María Eugenia Di Paola



... implementation of the Nagoya Protocol and associated access and benefit sharing provisions will contribute to the achievement of:



SDG 1
No poverty



SDG 2
Zero hunger



SDG 3
Good health and well-being



SDG 5
Gender equality



SDG 9
Industry, innovation and infrastructure



SDG 15
Life on land



SDG 17
Partnerships for the goals





REPUBLIC OF Colombia

Bioprospecting among microorganisms
from the Amazon rainforest for the
identification and production of pigments
for sunscreen development

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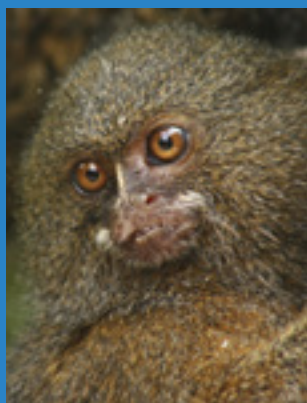
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SETTING THE SCENE

General view
of Colombian
biodiversity and
the Amazon
rainforest



... species identified in
the Colombian Amazon,
many of which are
endemic to Colombia and
only occur in this specific
area of the country:



1,625

plants
species



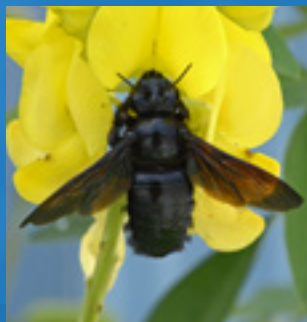
1,158

bird
species



193

amphibian
species



Colombia is a natural and earthly paradise, home of almost 10% of the planet's biodiversity. As of 2019, in its area of 1,100,000 km², about 63,000 species have been recorded, 9,000 of which are considered endemic. Coupled with this great richness of species, there are 311 types of continental and marine ecosystems and 59 protected areas (amounting to about 31,000,000 ha, equivalent to 15% of the national territory). The Colombian Amazon occupies about 40% of the national land area and contains 18 of the 59 national protected areas. Around 1,625 species of useful plants, 1,158 bird species and 193 amphibian species have been identified in this area, many of which are endemic to Colombia and only occur in this specific area of the country. The above descriptions of biodiversity place Colombia as the second most megadiverse country on the planet.

All this biodiversity and the continuous discovery of more and more species translates into a potential source of genetic resources and their derivatives, which Colombia advocates using in a sustainable way while guaranteeing benefit-sharing. This is why the country has been working on different strategies to help promote and develop a bioeconomy based on bioprospecting of regional natural resources. The strategies seek to promote the development of products, processes and services based on the sustainable use of genetic resources and their derivatives (prioritizing native species), from science, technology and innovation activities. The goal of such activities is to generate an alternative economic model independent from fossil fuel sources, which promotes economic, business and social development of the country, contributing in turn to resilience to climate change and to the benefit of communities. The final objective is to include the products developed in value chains that grant them a distinctive factor and that can be linked and used in a sustainable way by different types of industries (pharmaceutical, cosmetic, food, textile, agricultural, among others), resulting in important monetary and non-monetary contributions to the country.

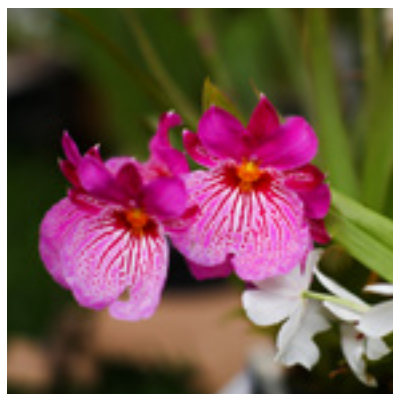
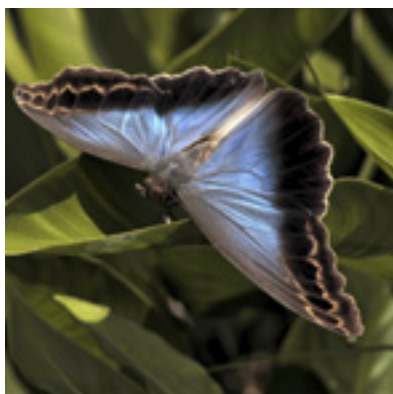
Progress of Colombia in the regulatory framework of Access to Genetic Resources

In Colombia, genetic resources and their derivatives are property of the State. The Ministry of Environment and Sustainable Development (MinAmbiente) is the competent national authority and focal point to authorize access to genetic resources and products derived from them. As a member of the Andean Community, Colombia manages the utilization of genetic resources and their derivatives through the provisions of the Andean Decision 391 of the Commission of the Cartagena Agreement, in which the contract for access to genetic resources and their derivatives is the mechanism used to establish MAT between the State, as owner of the resource, and the person or entity requesting authorization to access and use that resource. This is how the country complies with the provisions of Article 15 of the CBD. On the other hand, Colombia, through Resolution 1348 of 2017, modified by Resolution 1352 of 2018, defined the activities that constitute access to genetic resources and their derivatives. At present, MinAmbiente is updating its regulatory framework on access to genetic resources and their derivatives, with which it intends, in a single normative instrument, to regulate the procedure by reducing contract subscription times and updating the activities that constitute access to genetic resources and their derivatives.

To date, MinAmbiente has signed 394 contracts for access to genetic resources and their derivatives, 22 of which are framework contracts with universities and research centres, and 19 are for commercial purposes. Within the commercial contracts, important monetary and non-monetary benefits have been agreed upon which have given the

country such contributions as the generation and dissemination of knowledge, personnel training and qualification, technology transfer, job creation, institutional capacity building, payments for access to genetic resources and their derivatives, and payments for patent licensing. The projects contemplated in the commercial contracts have as their application area the food, textile, cosmetic, human health, agricultural and veterinary medicine industries, and focus on access to various plant species and microorganisms. As a result of that access and exploitation, commercial products have been obtained that include dyes, cosmetic creams, microbial inoculants, bio-inputs, plant extracts, sweetening extracts, biological additives, natural pigments, resistant starches and a sunscreen. Some of these products are currently commercialized in the Colombian and foreign markets; others are in the process of development and most have been subject of granted patents or are in the process of patent application both in Colombia and in other countries.

Colombia signed the Nagoya Protocol in February 2011 and is actually working to guarantee its ratification. As part of the actions that will allow its implementation, the country is developing an economic model and methodology to define the monetary and non-monetary benefit sharing derived from the access to genetic resources and their derivatives. Likewise, it is progressing in the construction of voluntary standards and protocols to facilitate access and optimize the benefit sharing derived from the utilization of genetic resources in accordance with Article 20 of the Nagoya Protocol.





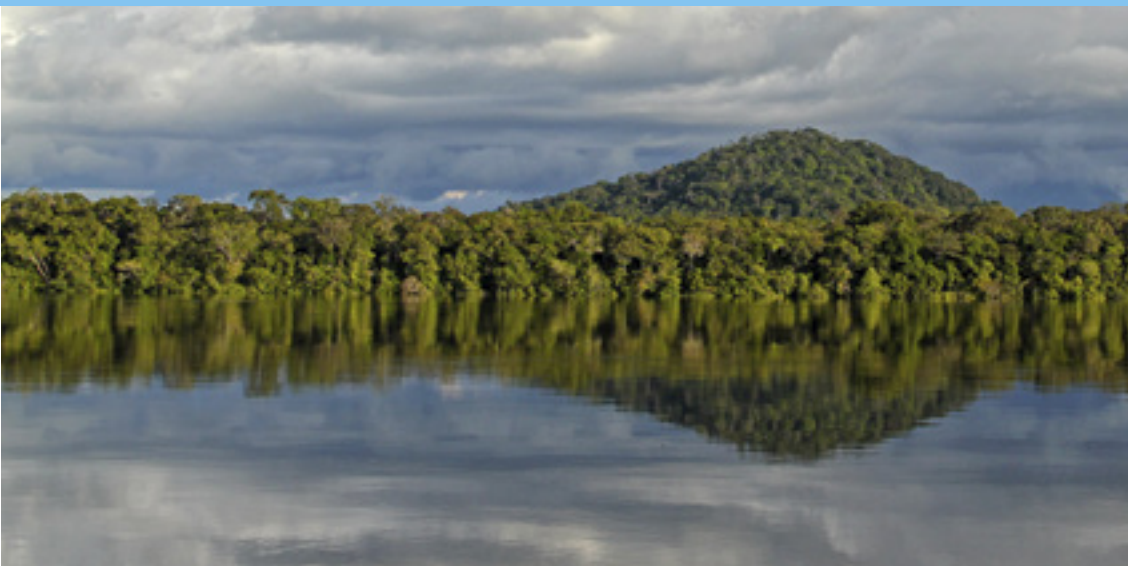
A BIODISCOVERY CASE

Microorganisms and pigments from the Amazon rainforest

As part of the UNDP-GEF Global ABS Project “Strengthening human resources, legal frameworks and institutional capacities to implement the Nagoya Protocol” the Amazonian Institute of Scientific Investigation (SINCHI) carried out the project “Development of a pigment from the diversity of microorganisms in the Amazon region in order to build a pilot ABS project for commercial purposes.” As a result of the project, a bioproduct with sunscreen activity was generated for the cosmetic industry, under the premise of implementing sustainable development initiatives based on scientific and technological research, applying principles of fair and equitable sharing of benefits. The above will allow the consolidation of value chains in the region to contribute to the economic and social development of its inhabitants.

The project aimed to develop a pigment from the diversity of microorganisms in the Amazonas department of the Amazon region. Thus, in order to promote adequate access to genetic resources and their derivatives, and to incorporate the fair and equitable sharing of benefits derived from the use and exploitation of the microorganisms, both MinAmbiente and SINCHI signed the Contract for Access to Genetic Resources and their Derivatives for Commercial Purposes No. 277 of 2019. SINCHI plans to scale up the natural pigment production process to a pilot level and to develop an intellectual property and licensing strategy associated with the technology developed and its technology transfer. Likewise, as part of the non-monetary benefits, the project trained indigenous community leaders of the Amazon on the sustainable use of biodiversity and green ventures with natural ingredients of species from the Amazon region.





"For the development of commercial or industrial activities with genetic resources and their derivatives, from MinAmbiente we have understood the importance of the articulation among the State, the academy and the industry for the development of products, processes and services. This approach has allowed us to sign contracts for access to genetic resources and their derivatives for commercial use, in which the monetary and non-monetary benefits that have been negotiated allow the strengthening of capacities in science, technology and innovation based on biodiversity. Likewise, this has allowed us to build trust so that more and more users are encouraged to carry out activities under the Colombian legal framework, which ultimately translates into an ABS system that can be a model for promoting the bioeconomy in the country."

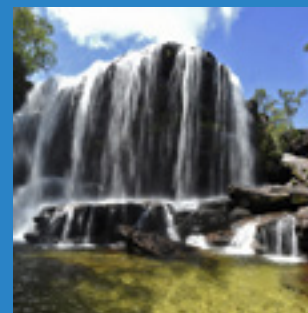
CARLOS AUGUSTO OSPINA BRAVO, Genetic Resources Group Coordinator, MinAmbiente

"As coordinator of the research activities for SINCHI associated with the development of a pigment from the diversity of microorganisms in the Amazon region, I was able to demonstrate how the Global ABS Project strengthened capacities for the development of bioprospecting activities with genetic resources and their derivatives in Colombia. This allowed the generation of a biodiscovery case with potential cosmetic use as a sunscreen."

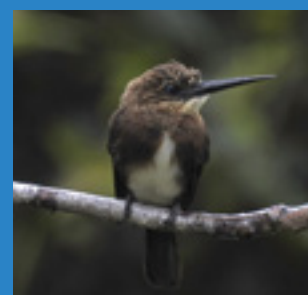
"A technical team made up of researchers Juliana Cardona, Marcela Carrillo and Carolina Diaz, and a legal team made up of lawyers Maria Jimena Maestre and Silvio Gomez, participated in the execution of this project. The development of the project allowed us, as a research institute of the Colombia's National Environmental System (SINA), to consolidate the microbial bioprospecting line for the sustainable exploration of this biological resource in the region."



EYEWITNESS STATEMENTS

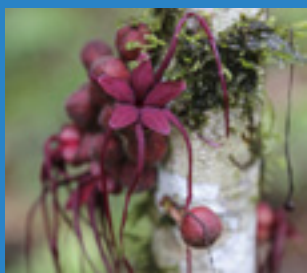


... the monetary and non-monetary benefits that have been negotiated allow the strengthening of capacities in science, technology and innovation based on biodiversity ...

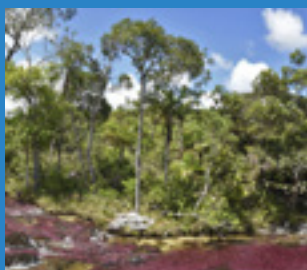


... the Global ABS Project strengthened capacities for the development of bioprospecting activities with genetic resources and their derivatives in Colombia.





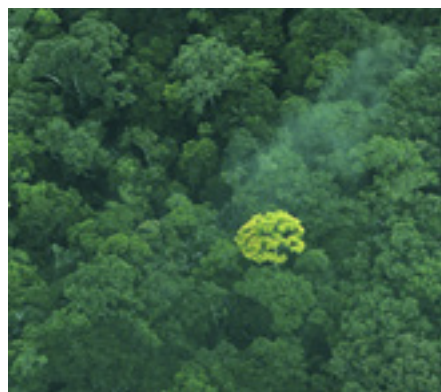
... we are witnesses to the inexhaustible source of metabolites with biotechnological potential that microorganisms possess ...



... the Amazon communities understood the potential present in the soil and how it supports plant life ...



... the value of this biological resource can become a novel and sustainable source of income ...



"As researchers, we are witnesses to the inexhaustible source of metabolites with biotechnological potential that microorganisms possess. In the Amazon, they have been poorly studied because they cannot be seen with the naked eye and specialized laboratory techniques are required for their identification. I have certainty that the Amazon communities understood the potential present in the soil and how it supports plant life, but they did not know the other applications that these microscopic organisms have and how this biological resource can be introduced into a value chain for economic purposes. This project was the channel to transmit to the communities the value of this biological resource and that it can become a novel and sustainable source of income. With the socialization of the results of the project with colonist and indigenous communities, there was awareness of the importance of such a biodiscovery for the Amazon and that the regulations on access to genetic resources, the Nagoya Protocol and the ABS System may become a continuing factor over their lifetimes.

"Undoubtedly, one of the main lessons learned from the development of this project was the articulation between different knowledge disciplines (microbiology, biology, chemical engineering and law) at the Institute. It also allowed us to strengthen our collaborative and interdisciplinary work relationships with the officials of the Genetic Resources Group of MinAmbiente and with the UNDP, for the execution of projects that seek to implement sustainable development initiatives based on scientific research using the microbial biodiversity of one of the most strategic ecosystems in the country, as is the Colombian Amazon."

GLADYS INES CARDONA VANEGAS, Researcher for SINCHI



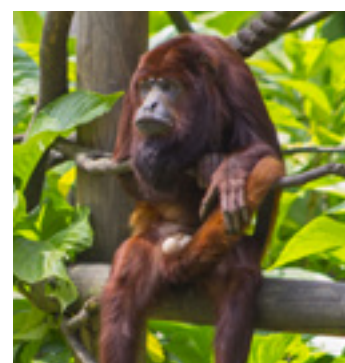
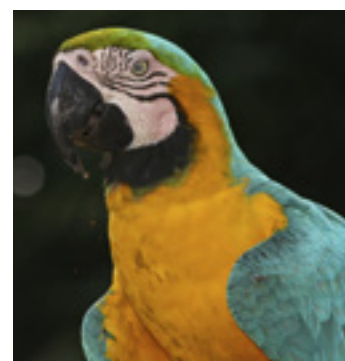
Boost to bioeconomy from our communities

During the execution of the project *“Development of a pigment from the diversity of microorganism in the Amazon region in order to build a pilot ABS project for commercial purposes”*, it was proposed, as part of the fair and equitable sharing of non-monetary benefits, to offer academic training at the higher education level of a member of the Siriano ethnic group from the Cachivera indigenous community located in the municipality of Mitu – Vaupés, who during the development of the project was a final-semester undergraduate student in biology. The benefit was to provide training in the assessment and sustainable use of biological resources, specifically in the isolation and characterization of microbial pigments from soil samples, to ensure the transfer of this knowledge to his community. Likewise, within the project’s framework, a socialization event was held with colonist and indigenous communities and with local institutions in Puerto Inirida – Guainia. This event was held in order to inform the assistants about the progress in the implementation of the Nagoya Protocol in Colombia, as well as to introduce the results and the importance of the biodiscovery for the Amazon region. Additionally, a workshop with children from the Luis Carlos Galan School took place, in order to show them the importance of preserving the biodiversity of their environment and how it can be exploited in a sustainable way. Among the topics discussed during the workshop were plant-microorganism-soil interactions and how bioactive metabolites with biotechnological application are synthesized from these interactions. On the other hand, during the workshop with the youth, a practical approach was taken demonstrating some uses that can be made of Amazonian plant biodiversity to obtain natural ingredients and how to use them in cosmetic and food products. As part of the practical exercise with the students, they were given step-by-step instructions on how to make a cream with natural ingredients of their region. The above is clear evidence that communities can be actively involved, not only in the conservation of biodiversity, but also in its sustainable use, thus, promoting bioeconomy in the country.

Lessons learned from UNDP’s vision

One important challenge posed by this project was the interinstitutional coordination among MinAmbiente, SINCHI and UNDP. Once the roles and competences of each of the parties were recognized, we managed to integrate efforts around the common objective of the project through dialogue, taking advantage of our strengths to achieve complementarities. Thus, SINCHI managed to learn in more detail about the legal aspects led by MinAmbiente, regarding access to genetic resources and their derivatives. MinAmbiente supported SINCHI in signing a contract for access to genetic resources and their derivatives for the development of the biodiscovery within the framework of the Global ABS Project. At UNDP, we strengthened capacities to support bioprospecting projects in Colombia.

The three institutions recognize that the Global ABS Project installed capacities in Colombia to improve the processes associated with the sustainable use of genetic resources and their derivatives for the development of bioprospecting activities that allow the generation of products, processes and services as an important contribution for the boost of bioeconomy that allows generating economic alternatives for the country.



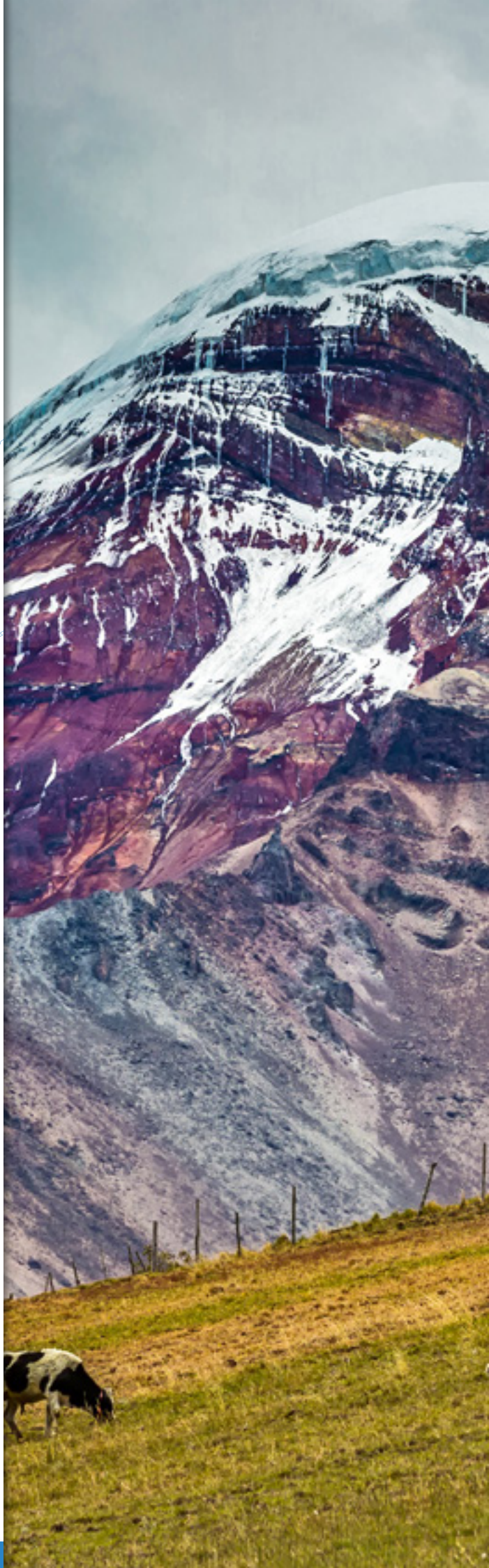


REPUBLIC OF Ecuador

Enhancing the preservation
and value of traditional knowledge
on genetic resources from local
communities

Authors

ABS-Ecuador Global Technical Team







SETTING THE SCENE



Ecuador is classified as one of the 17 countries with the greatest biological diversity on the planet, which houses species of ...



4,300

orchids



1,642

birds



18,198

vascular
plants



620

amphibians



The name Ecuador refers precisely to the geographical location of this country on the equator. Ecuador is classified as one of the 17 countries with the greatest biological diversity on the planet. This geographical position between the presence of the Andean Mountains and the confluence of important ocean currents explains the existence of 91 types of terrestrial ecosystems and 24 types of marine ecosystems, in a small territory of 283,560 km², which houses, for example, 4,300 species of orchids, of which 40% are endemic, existing only in Ecuador; 1,642 species of birds and 18,198 species of vascular plants, representing 5.7% of all plants on the planet.

Related to the size of the planet, Ecuador represents only 0.1% of the total land surface, but when analyses are performed per square kilometre, Ecuador leads in biological diversity per unit area. A particularly extraordinary case is the variety of amphibians of Ecuador. While Brazil and Colombia have the largest number of amphibians in their territories, followed by Ecuador, when the analysis is made per square kilometre, Ecuador, with its more than 620 species of amphibians, surpasses Brazil by 21 times and Colombia by almost 3 times.

This small country is also a multi-cultural and multi-ethnic state, which has 14 indigenous nationalities located on the coast, the mountain range and in the Amazon, along with important populations of Afro-Ecuadorians and *montuvios*. This combination of biological diversity and great cultural wealth means great opportunities, as well as challenges, for the sustainable use of genetic resources, derived from flora and fauna, associated or not, with traditional knowledge. The Amazon Regional University (IKIAM), located in the Amazon region, developed an experience that demonstrates the biomedical and economic potential of the use of biodiversity, looking for the biomedical potential that exists in exudates from the skins of amphibians. So far, 94 new molecules have been identified in three frog species: *Cruziohyala calcarifer* and *Agalychnis spurrelli* (Phyllomedusidae) and *Boana picturata* (Hylidae).

Another interesting experience, which is addressed below, is the research carried out by Alma College (USA), in collaboration with INABIO (National Institute of Biodiversity), on botany in Payamino, a community located in the Amazon region of Ecuador, where they have described 88 plants that the community use for medical practice. San José de Payamino signed the first free PIC of Ecuador for access to its traditional knowledge. This process was supported by the UNDP-GEF Global ABS Project in Ecuador.

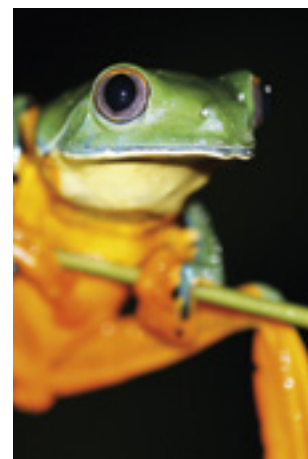
National framework on ABS and associated traditional knowledge

Since 1996, ABS in Ecuador has been regulated by Decision 391 on the Common Regime of Access to Genetic Resources of the Andean Community of Nations and over the years its scope has been adjusted and strengthened by national regulations. In 2011, the Ecuadorian government issued Executive Decree No. 905 on access to genetic resources to regulate key aspects of Decision 391 at the national level. This national framework was strengthened in December 2016, with the “Ingenios” Intellectual Property Code; in April 2017, with the Organic Environment Code (COA); and, in December 2017, with the ratification of the Nagoya Protocol. Interinstitutional coordination among MAAE (Ministry of Environment and Water), SENESCYT (Secretariat of Higher Education, Science, Technology and Innovation), INABIO and SENADI (National Service of Intellectual Rights), with competencies established in these instruments, have been developing the corresponding secondary regulations, applicable at the national level.

These legal instruments constituted a valuable opportunity and, at the same time, a great challenge, since they changed the institutional competencies that were in place until April 2017 and centralized in MAAE, by now establishing SENESCYT as the governing entity of national science and technology, including the power to issue research permits and sign framework contracts for access to genetic resources.

To promote interinstitutional dialogue, a process was carried out that sought transparency and consensus, with the Global ABS Project as facilitator. Thus, after talks during the second half of 2017, the Project Steering Committee approved, on 15 January 2018, an interinstitutional roadmap for strengthening ABS regulations in Ecuador. With the contribution of different specialists and the above-mentioned institutions, several key instruments were generated. In particular, the “*Regulation that regulates the scientific investigation of biodiversity and access to genetic resources and/or their derivatives*”, or “ABS Regulation”, which, once approved, should become a key instrument to regulate access for research with commercial and non-commercial purposes in Ecuador.

The proposed “ABS Regulation” was presented to the Presidency of the Republic in December 2018 and when approved through an Executive Decree, SENESCYT’s capacity is likely to increase to facilitate access to genetic resources and benefit-sharing in Ecuador. In the meantime, SENESCYT and



... 94 new molecules have been identified in three frog species: *Cruziohyla calcarifer* and *Agalychnis spurrelli* (Phyllomedusidae) and *Boana picturata* (Hylidae).

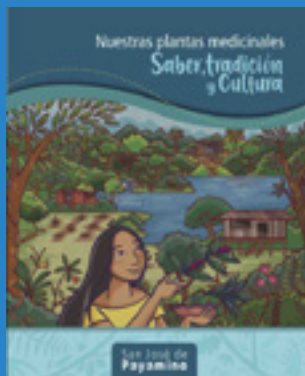


... research carried out on botany in Payamino described 88 plants that the community use for medical practice ...





Spanish-language, layperson publication produced with support of the Global ABS Project.



The Alma College researchers developed two pilot cosmetic products from plants, with interesting commercial potential:

Nail polish derived from a species of the genus *Vismia* (Hypericaceae)



Shampoo from *Oenocarpus bataua* (Arecaceae)



MAAE have signed an interinstitutional agreement which allows MAAE to continue granting research permits and signing framework contracts for access to genetic resources and benefit-sharing.

These access permits and contracts, signed by MAAE, are processed online, which has made it possible to accelerate service times significantly. The training process on the MAAE Platform, for researchers in the country, was supported by the Global ABS Project. With this platform, MAAE has signed 127 contracts for access to genetic resources for research purposes. It should be noted that article 408 of the Constitution of Ecuador may have implications on future ABS requests for commercial purposes as it requires the State to participate in the benefits of the use of genetic resources in an amount not lower than those of the company using these resources.

Other ABS-related instruments and complementary technical regulations were facilitated with the support of the Global ABS Project. These include:

- regulations for the operation of germplasm banks in Ecuador
- a regulation for the Organic Code of the Environment, Chapter on Genetic Resources
- technical criteria for the conservation of biodiversity, in the process of granting permits and access to genetic resources
- a proposal for the implementation of public policy referring to traditional knowledge and ancestral knowledge of peoples and nationalities of Ecuador linked to genetic resources
- a Virtual Single Window for Research on Biodiversity (VUVIB) (1st phase)
- a Methodological Guide for the Construction of Biocultural Community Protocols
- five Biocultural Community Protocols
- 229 SENADI Voluntary Deposits of Traditional Knowledge
- ABS Training of Trainers Programme.

The communication strategy was a priority axis of the process catalysing the development of the following workshop and communication products:

- an international workshop on traditional knowledge (September 2018)
- awareness-raising workshops in 13 provinces of the country in which 1,800 representatives of nine indigenous peoples participated
- Biodiversity Week 2020.





A BIODISCOVERY CASE

Negotiating ABS agreements and learning about business models of industries that use genetic resources/traditional knowledge

The Kichwa San José de Payamino community sits in the Amazon region of Ecuador, in a beautiful humid tropical landscape, which is part of the buffer zone of the Sumaco National Park. The 16,500 ha of the community are located in the geographical transition between the eastern foothills of the Andes and the Amazon plain, which produces a high biodiversity in the region. There are 76 families in the community who protect their ancestral knowledge and customs regarding the use of medicinal species, with the active participation of women. It is a united, open and generous community.

"Our grandparents left us the teachings of how to cure various diseases, taking advantage of the benefits of medicinal plants that grow where we live. Our community is ready to collaborate with the investigation of these medicinal plants, provided that our rights and the equitable participation in the benefits are guaranteed."

STATEMENT IN THE BCP "RUKU KAWSAY," by the San José de Payamino Community, Loreto Canton, Province of Orellana

The Alma College, Michigan, USA has been conducting research in the community since 2012, with the support of the National Institute of Biodiversity (INABIO), under research permits established within the Ecuadorian legal framework, granted by the MAAE. The researchers, led by Dr Brian Doyle, from Alma College, in collaboration with Dr Diana Fernández, representing INABIO, together with the Payamino community, managed to retrieve information on the use of flora and produced a scientific report *"Medicine of Payamino: A guide to medicinal plants of the Kichwa community San José de Payamino, Orellana, Ecuador"* with complete records for 88 species giving details such as scientific and common names, descriptions of the plants, their uses and forms of preparation. On the basis of this publication, an online, Spanish-

language, layperson version was also produced, aimed at children and young people in the community, as a mechanism to engender value for the traditional knowledge of the community's grandparents and transmit them to the new generations (*"Nuestras plantas medicinales: Saber, tradición y cultura"*). Both publications had the support of the Global ABS Project.

As part of this project, the Alma College researchers developed two pilot cosmetic products from plants, with interesting commercial potential: i) Nail polish derived from a species of the genus *Vismia* (Hypericaceae) and ii) Shampoo from *Oenocarpus bataua* (Arecaceae). These products were delivered to the community and steps are being taken for their commercial development with other international cooperation projects that work in the area.

The information about plant species with medicinal uses collected during this research project is part of the Symbiota database of INABIO and SENADI Voluntary Deposits of Traditional Knowledge. At least 15 plant species were determined have potential medicinal use, due to their chemical and biological properties. A second phase of research has begun, with the aim of characterizing the biological activity of plants for medicinal use.

With this perspective, the MAAE has signed the corresponding contract for access to genetic resources for research for non-commercial purposes, for which it was necessary to previously have the free PIC by the Payamino Community, with the support of SENADI. Thus, this free PIC is the first in Ecuador. It is hoped that this new phase of research will allow the detection of new potential sources of active ingredients and raw materials for the elaboration of medicines and, at the same time, rescue and enhance the traditional knowledge of the Kichwas of Payamino.



EYEWITNESS STATEMENTS



... this type of natural resource can be exploited in a sustainable way, ensuring that the benefits are shared fairly and equitably among all.



Dr Diana Fernández-Fernández



... we aim to conduct biological and chemical analyses of Payamino plant specimens in hopes of unlocking the potential of these plants to lead to marketable products that could benefit the Payamino people and the world.



Dr Brian Doyle



Ana María Guacho, leader and resource of traditional knowledge for the Puruwa people

"It is a unique experience to be able to access the impressive wealth of knowledge they have of plants, the medicine that serves to cure certain ailments is in their forest, in their chakra. The naturalness and confidence with which they go in search of them and make the concoctions, plasters or simply rub with them is admirable, all this demonstrates the perfect conjunction man-nature. The generosity of the elderly, men and women, was also rescued by the transmission of their knowledge to their own community and to strangers."

"Through the joint and coordinated work of research institutions, control agencies, financing agencies and holders of traditional knowledge, this type of natural resource can be exploited in a sustainable way, ensuring that the benefits are shared fairly and equitably among all. Timely support and advice to all actors in these processes will guarantee favourable results for the community, the country and science."

DR DIANA FERNÁNDEZ FERNÁNDEZ, INABIO

"The keys to our success in developing a community-focused, collaborative research program in San José de Payamino have been patience, time and commitment to building relationships with the community. What began eight years ago as an ethnobotanical field course, in which Alma College students learned to appreciate the extent of the traditional ecological knowledge held by the Payamino people, has developed into a collaborative effort to document Payamino medicinal plant knowledge and to devise strategies for the Payamino people to benefit from this knowledge in new ways. Over the years, this project has grown to include esteemed collaborators from various Ecuadorian academic and governmental institutions, though the most important collaborators are still the Payamino people. Currently, we aim to conduct biological and chemical analyses of Payamino plant specimens in hopes of unlocking the potential of these plants to lead to marketable products that could benefit the Payamino people and the world."

DR BRIAN J. DOYLE – Associate Professor, Biology, Alma College, Alma, Michigan USA

IPLCs' capacities, Biocultural Community Protocols and SDGs impacts

Key actors in the process of implementing the Nagoya Protocol in Ecuador have been IPLCs. The Global ABS Project and the UNV programme contributed, jointly with the MAAE, SENESCYT and SENADI, in strengthening the capacities of the IPLCs, with the aim of empowering, sensitizing and raising awareness about the mechanisms of protection of traditional knowledge, as well as highlighting the importance of fair and equitable distribution of the potential benefits derived from the use of traditional knowledge, associated or not with genetic resources.

These institutional efforts resulted in the training and sensitization of 1,800 leaders, girls and boys, young and old, wisdom elders of several indigenous peoples of Ecuador (Afro-Ecuadorian, Kayambi, Puruwá, Manta, Salasaca, Otavalo, Mestizo and Montubio) and five nationalities (Siona, Kofán, Waorani, Shuar and Kichwa Amazonian), in 13 provinces nationwide. This work was closely linked to the territory, with a strong focus on the participation of women, guardians of traditional knowledge and transmitters to new generations. In the process, 50 indigenous representatives were selected to be part of the ABS Training of Trainers Programme, the Nagoya Protocol and the mechanisms for the protection of traditional knowledge. Thus, the selected ones will be able to form, train and replicate, in their organizations and communities, these fundamental aspects of the ABS Regime in Ecuador.



ABS Training of Trainers workshop in Tena, Ecuador

In accordance with Article 12 of the Nagoya Protocol, referring to “community protocols in relation to traditional knowledge associated with genetic resources and the fair and equitable sharing in the benefits derived from the use of such knowledge”, five communities were identified: the Kichwa San José de Payamino Community (Orellana Province) and the Association of Producers of Guayusa de Ruku LLakta (Amazon Kichwa) (Napo Province) from the Amazon region; the Tsa’chila Nationality (Province of Santo Domingo de the Tsa’chilas) and the Manta Pueblo Agua Blanca Community (Province of Manabí) in the coastal region and the Guamán Poma Integral Development Association, of the Puruwá People (Chimborazo Province) in the Sierra region.



... Alma College students learned to appreciate the extent of the traditional ecological knowledge held by the Payamino people ...



... institutional efforts resulted in the training and sensitization of 1,800 leaders, girls and boys, young and old, wisdom elders of several indigenous peoples of Ecuador.



... a strong focus on the participation of women, guardians of traditional knowledge and transmitters to new generations.



... preparing the BCPs had an express gender focus, with the active participation of women from the community, thus contributing to SDG 5 Gender Equality ...



... BCPs are expected to be effective instruments for the protection of the traditional knowledge and mechanisms that ensure the equitable distribution of the potential benefits derived from the sustainable use of biodiversity, contributing to SDG 10 Reduced inequalities ...



The project worked with these communities with the aim of assisting them in the elaboration of their individual BCPs and subsequently developing a guide that could serve other communities in the country in the process of safeguarding as the legitimate holders of their traditional knowledge, associated or not with genetic resources.

These BCPs are currently in the validation phase, by the five communities, where a high percentage of women and youth participated, respecting their community organization. These instruments, as manifested by the members of the five communities, promote an intercultural dialogue in which principles, rules, responsibilities and obligations are established for relations with external actors, in the process of accessing traditional knowledge associated or not with genetic resources. They will also allow the communities themselves to make their priorities known and to ensure their customary rights are respected and ancestral practices regarding the care, respect and protection of the Pachamama or Mother Earth are valued.

The process of preparing the BCPs had an express gender focus, with the active participation of women from the community, thus contributing to SDG 5, the achievement of gender equality and empowerment of all women and girls. Additionally, the BCPs are expected to be effective instruments for the protection of the traditional knowledge and mechanisms that ensure the equitable distribution of the potential benefits derived from the sustainable use of biodiversity, contributing to SDG 10, the reduction of inequalities within and among countries, in this case promoting sustainable development of rural indigenous communities within Ecuador.



Silvia Quinatoa (left) of Kisapincha town and Javier Aguavil (right), leader of the Tsá'chila Nationality, at an event designed to strengthen trust between indigenous peoples and researchers with respect to ABS.

Challenges remain for the communities, in the medium and long term, so that the BCPs are sustainable and are considered in the agendas of local governments. They serve also as a kind of cover letter for negotiation processes with third parties which may take place for access to their traditional knowledge associated with genetic resources. Finally, the design and implementation of a more specific national public policy is expected, to ensure the equitable sharing of benefits, which go directly to the communities that sustainably take advantage of biodiversity.



MESSAGES FROM SDG ADVOCATES

"Working collaboratively, by joining efforts, it is possible to expand the message so that it reaches more people, with precise and punctual actions, which have motivated the population to awaken to a more environmentally friendly thinking, recognizing the relevance of Ecuadorian biodiversity. Collaborative actions generate bonds of friendship between all the actors, in order to position the conservation message, which is the same in all of them."

TECHNOLOGIST PAULINA NARANJO, Social Communication Analyst, INABIO.

A committed ABS team has been consolidated, not only for the development of ABS regulations but for the organization and implementation of events and communication strategies of great scope, related to biodiversity and genetic resources. On average, 13 organizations (state, NGO, academia and civil society) have been working collaboratively in order to optimize resources and take advantage of the expertise of each organization to come up with key messages and generate broader awareness processes.



"The lesson that allowed me to work in this way is that early planning is key, having worked several months in advance and, also, having previous experiences of working together, facilitate management. Identifying each member's strengths helped empower the products. Finally, having a work team with the same objective and common goals."

MR SEBASTIÁN ESPÍN, Communications Specialist, UNDP-GEF Coastal Fisheries Initiative Latin America, which collaborated with the Global ABS Project, at Biodiversity Week 2020

In the same way, it has been possible to work with several indigenous peoples of Ecuador, supporting collaborative work, especially with SENADI. More than 1,800 indigenous peoples' representatives have been part of the awareness-raising processes, in mechanisms of protection of traditional knowledge associated with genetic resources, originating from biodiversity. In short, working in a network delivers better results and motivates greater commitment and effort toward the achievement of common objectives.



Paulina Naranjo



... working collaboratively
it is possible to expand
the message so that
it reaches more people ...



Sebastián Espín



... early planning is key,
having worked several
months in advance and,
also, having previous
experiences of working
together, facilitate
management.



REPUBLIC OF Honduras

Implementation of the
Nagoya Protocol while generating
and strengthening
national capacities

Authors

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SETTING THE SCENE



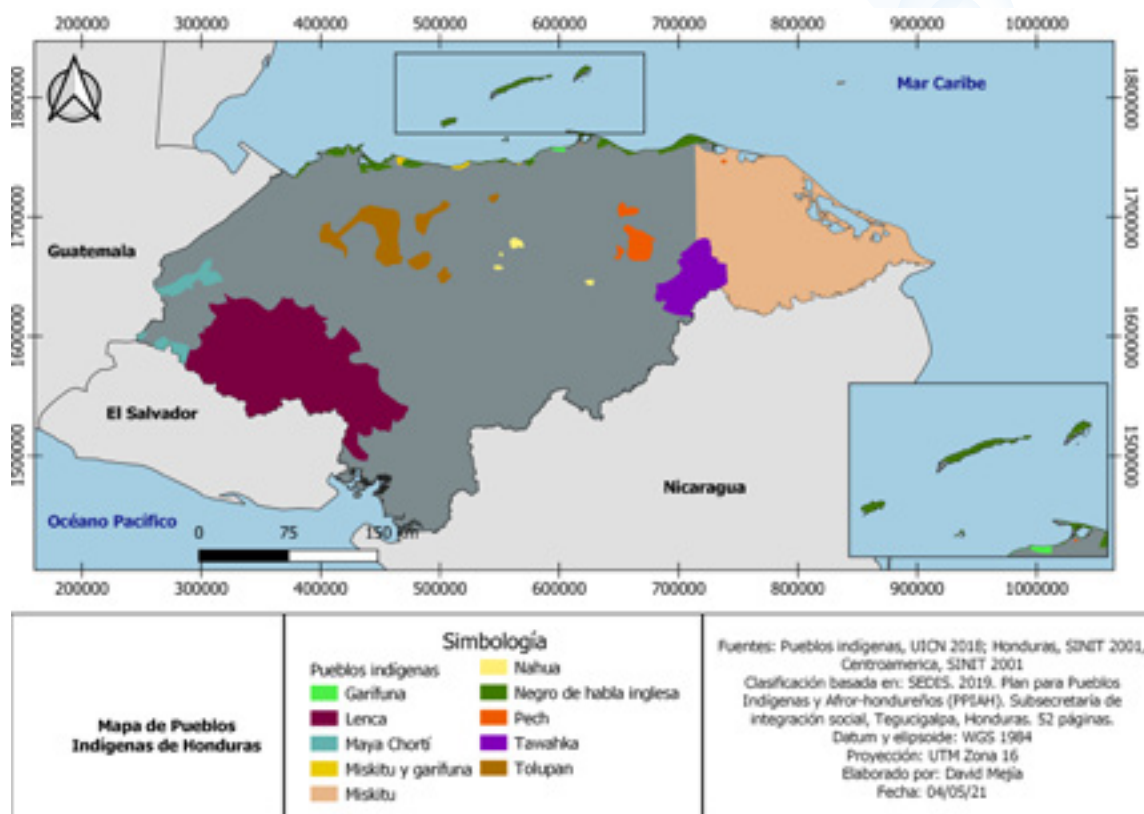
... Honduras encompasses 63 ecosystems and is home to a remarkable diversity of species of flora and fauna, totaling 10,127 taxa ...



The geological profile and a topography of accentuated contrasts associated with the climatic influence from proximity to both the Pacific and Atlantic oceans position Honduras as one of the geographic centres of great biological diversity, presenting a vast and varied network of natural ecosystems. According to the Physiognomic-Ecological Classification of the Plant Formations of the Earth, adopted by the United Nations Educational, Scientific and Cultural Organization, Honduras encompasses 63 ecosystems, classified into nine types of physiognomic units based on plant life forms. This diversity features an extraordinary variety of substrates and number of microhabitats differentiated by the typology of ecological systems and ultimately, according to the National Biodiversity Strategy 2018–2022, means that Honduras is home to a remarkable diversity of species of flora and fauna, totaling 10,127 taxa (including species, subspecies, varieties and forms); 214 of these taxa are endemic.

This known natural capital, and that still to be discovered and described, represents for Honduras a valuable opportunity to develop and encourage biotechnological scientific research for pharmaceutical, food and industrial purposes. Such research would also contribute to the effective management of ecosystems and biodiversity and provide opportunities for contributions to general well-being, economic benefits and development. Biological and cultural diversity establishes Honduras as a focus for the development of research projects and incentives to promote economic activities and the payment of benefits to rural communities and the nine culturally differentiated peoples: the indigenous peoples Maya-Chortí, Lenca, Miskitu, Pech, Tawahka, Nahua, Tolupan, and the Afro-Honduran peoples: Garífuna and English-speaking blacks or islanders, according to their contributions and ancestral knowledge about biodiversity.

Throughout history these peoples have promoted conservation of biodiversity in their territories through the oral transmission of their practices and knowledge based on respect and good management of their natural resources, using them for commerce, medicine and food in a sustainable way. This knowledge has already been recognized by the State, which has decreed it as a National Cultural Heritage.



Distribution of indigenous and Afro-Honduran peoples

National framework on ABS and associated traditional knowledge

Honduras ratified the CBD in 1995, however, very few actions were developed to fulfill its third objective, to have legislation that addresses the protection and sustainable use of natural and genetic resources in general, focusing on the processing and delivery of permits for the use of the biological resource. A complication has been that the purview of this permitting process falls to more than one government institution.

It was not until 2013 by Decree 41-2013 that Honduras ratified the Nagoya Protocol, and effectively committed to its implementation, starting in 2017, with the first national effort, through the UNDP-GEF Global ABS Project. Through the Global ABS Project, a normative proposal was formulated for access to genetic resources, participation and benefit-sharing measures, through a regulation and a technical administrative manual of procedures for access to genetic resources. Those instruments were introduced into the institutional framework through the Ministry of Energy, Natural Resources, Environment and Mines (MiAmbiente+), being approved in 2021 as a regulation through a Ministerial Decree.

The scope of the proposed regulation covers genetic resources and their derivatives in both in situ and ex situ conditions, but excludes biological resources considered as “commodities” in commerce or biocommerce chains, in line with the Nagoya Protocol. The regulation will not apply to indigenous peoples and local communities when the exchange and use of genetic resources and their derivatives is in accordance with traditional practices and their customary laws. The regulation mandates that PIC of indigenous peoples and local communities be considered during negotiations. To carry out the mandates of the regulation, it designated three competent authorities with specific functions and two national verification points.



Through the Global ABS Project, a normative proposal was formulated for access to genetic resources, participation and benefit-sharing measures, through a regulation and a technical administrative manual of procedures for access to genetic resources.



The proposed Regulations and Technical Administrative Manual on Access to Genetic Resources details an access procedure involving six steps:

1. Presentation by the applicant to the Secretary of MiAmbiente+ of the request for access and use of genetic resources and their derivatives, including a description of the corresponding research project according to an established format.
2. Referral of the application and project by MiAmbiente+ to the authority with corresponding sectorial administrative competence.
3. Evaluation of the request by the authority with sectoral administrative competence and its acceptance or substantiated rejection.
4. Negotiation of the access and use contract between the authority with sectoral administrative competence and the applicant, with the participation of MiAmbiente+ and instances of technical advice that may be required.
5. Incorporation as an annex to the contract, the document that specifies the conditions of use of the traditional knowledge of indigenous peoples and local communities, if applicable.
6. Referral of the signed contract and the complementary documentation to the Secretary of MiAmbiente+ for the issuance of the final resolution and formal notification to the applicant.



Dr Ligia Medina, Research Professor, Faculty of Chemistry and Pharmacy, UNAH, participant in the genetic analyses of the research project

Promotion of Honduran research through the development of a biodiscovery case in the pharmaceutical market

A Biodiscovery Pilot at the national level was launched with the Natural Products Research Group of the Faculty of Chemistry and Pharmacy of the National Autonomous University of Honduras (UNAH). This scientific investigation is entitled "Chemical analysis and genetic differentiation of varieties of *Sapindus* spp. located in the departments of Santa Bárbara, Choluteca and El Paraíso." The research project is based on the determination for species of *Sapindus* (a genus of shrubs and small trees in the Sapindaceae family) of their secondary metabolites and their anti-*Leishmania* activities. Leishmaniasis is a disease transmitted by a *Leishmania* parasite and is a national public health problem, mainly in rural areas.

Even though the proposed Regulations and Technical Administrative Manual on Access to Genetic Resources is not yet official, this research initiative complies, as appropriate, with existing procedures, but also follows the requirements of the proposed Regulations in order to promote the importance of the approval of those Regulations. In this way, the research initiative contributes to clarifying, ordering, substantiating and streamlining the corresponding management process, in accordance with the ABS guidelines contemplated in the aforementioned instrument.

In a complementary way, the financing of scientific research by the Global ABS Project supported and promoted Honduran pharmaceutical scientific research and legal access to genetic resources and the sharing of benefits that can be realized, also contributing to UNAH and the general public, in case pharmaceutical benefits materialize due to the properties derived from the species under investigation. This partnership will also mobilize additional financial resources from UNAH to ensure the continuity of the investigation based on the pharmaceutical properties determined in the course of the investigation.

The national emergency and pandemic caused by COVID-19 has interrupted this investigation and the process of negotiating and managing access permits before the national authorities under the framework of the ABS measures.

Report of the Research Group on Natural Products, National Autonomous University of Honduras

"As a research group with a focus on natural products, it is our interest to study the chemical and biological properties of the flora and fauna of Honduras, considering that there are many species with potential therapeutic agents against diseases that affect humans, animals and plants that could be used as raw material in the pharmaceutical, food and chemical industries. Many of these species have not been studied. However, due to their chemical properties and traditional knowledge about them, they contribute to the treatment of health conditions marking them as promising species for eventual commercial uses that could generate income for members of rural groups and communities."

"Consistent with the above, it is in our interest to document and preserve the knowledge of the traditional use of plants through ethnobotanical surveys, which is part of the cultural wealth of our peoples, transmitted from generation to generation. Despite the importance of this traditional knowledge, it is being lost. As researchers, our interest is to contribute to our communities by generating scientific knowledge and expanding the portfolio of information about our species, ultimately transferring the gained knowledge and technology to communities, especially those that due to their ancestral knowledge have been the basis of research projects."

*"Our project aims to study the chemical, biological and genetic differentiation properties of varieties of the species *Sapindus saponaria*. This research is novel since in Honduras there has been no phytochemical analysis to investigate the taxonomic uncertainty of this species and to evaluate its biological activities such as the antioxidant, anti-inflammatory and anti-Leishmania properties. Our research will undertake these investigations with the hope of achieving an eventual alternative for treatment of inflammation and leishmaniasis."*

"Undoubtedly, conducting our research in light of ABS measures, the Nagoya Protocol and the proposals of new procedures to permit the utilization and exploitation of the genetic and biochemical elements of our target species will be a challenge and an opportunity to us as academic researchers. At the same time, it should be a new impetus for the promotion of research and greater participation, involvement and benefits for the communities in our future projects."

CARLOS HENRÍQUEZ, Research Professor, Faculty of Chemistry and Pharmacy, UNAH



The research project is based on the determination for species of *Sapindus* of their secondary metabolites and their anti-Leishmania activities.



Carlos Henríquez



Our project aims to study the chemical, biological and genetic differentiation properties of varieties of the species *Sapindus saponaria*.





Wildflower in the
Guisayote Biological
Reservation.



View of Guisayote
Biological Reservation's
nucleus-zone.



Young ABS and
biodiversity volunteer
trainers, identifying wild
plants in Los Naranjos
archaeological park.



Bioculturality and participation of indigenous and Afro-Honduran peoples in its benefits

An important challenge in the execution of the Global ABS Project in Honduras was to develop actions to favour and specify access to information and knowledge among indigenous and Afro-Honduran peoples about the ABS measures and the Nagoya Protocol, and their involvement in their daily activities, their practices and their collective traditional knowledge. In the framework of the generation and strengthening of knowledge on the subject, the Global ABS Project in Honduras has planned to accompany the process of formulation by the Pech Indigenous People of a BCP. However, with little experience in the country on the development of a biocultural community protocols and the constraints of the scope and limits under the Nagoya Protocol, it was difficult to start the process.

Ultimately these difficulties were overcome and the coordination, approval and agreements with the Organization of the Pech People and the Confederation of Indigenous Peoples of Honduras for the development of the BCP were achieved. Unfortunately, the process stopped as a consequence of the restrictive measures related to the emergency of COVID-19, which prohibited, among other things, the mobilization and holding of meetings.

The implementation of the Global ABS Project in Honduras has generated information and strengthened the knowledge and capacities of indigenous and Afro-Honduran leaders. Through the Interinstitutional Committee for Biocultural Heritage, it has been possible to introduce "Bioculturality" as an interinstitutional work element, of significant importance for the protection and recognition of the rights of indigenous and Afro-Honduran peoples. One achievement was the First National Forum on Biocultural Heritage and Roundtable: Genetic Resources/Indigenous Peoples, 8–9 August 2018.

Other relevant instances were the organization of the First and Second National Congresses of Biodiversity (Honduras Biodiversa) in 2017 and 2019, respectively, at which different symposia were held encompassing the Indigenous Bioculturality Discussion and ABS. The symposia integrated issues on the Nagoya Protocol and featured the participation of different technical international and regional experts who shared their implementation experiences in their countries.

On the protection of indigenous and Afro-Honduran traditional knowledge and folklore under intellectual property instruments, coordination and agreements have been established, in particular, on the importance of strengthening relationships of trust between indigenous peoples and government institutions, as part of the measures to protect their traditional knowledge and the regulation of access to traditional knowledge, protected by existing legal tools. Finally, even though the dissemination and knowledge of ABS has expanded, there is still the challenge of achieving the adoption of the Nagoya Protocol by indigenous and Afro-Honduran peoples, as well as by local communities, in particular, internalizing it as an international instrument of intellectual recognition and indigenous law.

The Global ABS Project in Honduras: A reflection on its implementation and the achievement of its objectives

The Global ABS Project in Honduras has been the first effort focused on achieving an effective implementation of the ABS measures and the Nagoya Protocol in the country. The lack of information at the national level and the general lack of knowledge on this matter have been a substantial challenge successfully addressed to certain extent by the country in the implementation of the project, through several trainings and capacity-building activities at all levels: with different government departments, within the research community and with a special focus on indigenous peoples. The following can be mentioned as the key relevant achievements:

- The formulation of a proposal for the national ABS regulations and the Administrative Technical Manual, outlined in response and correspondence with the current environmental legal framework in Honduras, articulating the different competent government agencies in an efficient manner.
- Empowerment of indigenous and Afro-Honduran populations on their rights over traditional knowledge associated with genetic resources and in the necessary articulation of those rights with governmental institutions, building the necessary trust between them. Some of these capacities have been acquired through the exchange of experiences with different members of the “Global ABS Community”, which has enabled understanding the framework of relationships and agreements among these sectors.
- The formation of a national network of volunteers in biodiversity with support and integration of the UNV in the actions of the project resulted in a significant multiplier effect of the results and public awareness activities of the project. These volunteers are young professionals from all regions of the country, who have extended the knowledge they acquired related to the Nagoya Protocol, developing training, knowledge and awareness in the context of their communities or work, professional or organizational spaces.



Young ABS and biodiversity volunteer trainers, bird watching along Lake Yojoa



REPUBLIC OF Panama

Supporting the preservation
and management of genetic resources
in accordance with the
Nagoya Protocol

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SETTING THE SCENE



Despite its small size,
it has a high diversity
of ecosystems
and habitats ...



10,444

species of
flora



2,772

fungal
species



219

amphibian
species



240

reptile
species



1,002

bird
species



270

mammalian
species



220

species of
freshwater fish



1,157

species of
marine fish



The Republic of Panama is located in the intertropical zone. With an area of 75,517 km², it is the easternmost, narrowest country in Central America, formed by the low-lying isthmus between Central and South America. The country is bordered on the east by the Republic of Colombia, on the west by the Republic of Costa Rica, on the north by a 1,287-km coast with the Caribbean Sea and on the south by a 1,700-km coast with the Pacific Ocean. South of the mainland, on the continental shelf, are 1,518 islands and cays which belong to the country.

Despite its small size, it has a high diversity of ecosystems and habitats. The Vegetation Map of Panama (year 2000) shows 24 types of vegetation. Panama's continental forest cover (forests, wetlands) is estimated at 4,305,154 ha (77.5% of the country's land area). Mature forests are found mainly in the Caribbean lowlands and in the Darien region. It is estimated that the flora of Panama is made up of 10,444 species, of which 91.2% are vascular plants. In 2013, 2,772 fungal species were recorded. Panama is home to approximately 219 amphibian species (3.4% of the world's total), 240 reptile species (2.3% of the world's total), 1,002 bird species (9% of the world's total) and 270 mammalian species (4.8% of the world's total). In Panama, a total of 220 species of freshwater fish and 1,157 species of marine fish have been identified. The endemic species of Panama amount to 1,300, of which 1,176 are plants, 49 are amphibians, 33 are reptiles, 8 are birds, 16 are mammals and 64 are freshwater fish.

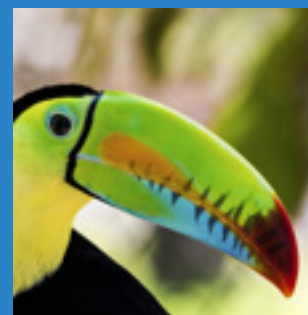
Since 1975, at the University of Panama with the creation of CIFLORPAN (Pharmacognostic Research Centre of Panamanian Flora), national researchers have been studying the potential of genetic resources contained in plant biodiversity. In 2008–2014, an International Cooperative Biodiversity Group bioprospecting project was carried out, through an agreement between the Panamanian National Environment Authority and the Smithsonian Tropical Research Institute in Panama, for the search and identification of chemical compounds with potential for the pharmaceutical and agricultural sectors. Initially, the research focused on lowland and highland wild plant species, and then turned to marine species associated with corals.

National framework on ABS and associated traditional knowledge

The UNDP-GEF Global ABS Project contributed to the updating of the national regulation on ABS, through a participatory consultation process (in years 2017 and 2018), which was achieved with the approval of the Executive Decree 19 of 26 March 2019 *"By which the access and control of the use of biological and genetic resources in the Republic of Panama is regulated and other measures are issued."* The scope of this new regulation is contained in its article 2 which *"Regulates the access, use and fair and equitable sharing of the benefits derived from the use of biological and genetic resources, with the exception of the human species, in ex situ or in situ conditions, of those that Panama is a country of origin or provenance, are wild or their derivatives."* Migratory species that are found in the national territory due to natural causes are included; as well as access to the knowledge, innovations and traditional practices of indigenous peoples and local communities associated with the resource. It also regulates the control of the use of genetic resources and traditional knowledge, in Panama, by both Panamanians and citizens of other countries that are part of the Nagoya Protocol.

Elements of progress or improvements of this new decree with respect to the previous one, include:

- The control of the use of genetic resources from other countries that are Parties to the Nagoya Protocol, in Panama, is now encompassed.
- Designation of Verification Points is now taken into account.
- The duration of the validity of the access permit was extended for up to 3 years as required by an investigation request.
- The application for access to genetic resources for commercial purposes must now be accompanied with a draft Benefit Sharing Agreement, including the profit distribution commitments (both economic and non-economic), with the competent national authority. A period of 6 months is defined for benefit-sharing negotiations. Percentages of benefit distribution are defined depending on whether or not the application includes the participation of national institutions.



... the new national regulation on ABS:



includes migratory species that are found in the national territory due to natural causes



access to knowledge, innovations and traditional practices of indigenous peoples and local communities



regulates the control of the use of genetic resources and traditional knowledge



Key elements of the procedure for access to genetic and biological resources in Panama

Applicant must agree to the following conditions when applying for access:

- recognition of the inalienable rights of the Panamanian State over all the resources to be collected based on the proposed research
- recognition of the rights of the Panamanian State as a partner in any possible benefit from commercial or industrial application or economic use in stages subsequent to basic research
- exemption from any responsibility of the Panamanian State for damages caused to third parties, for the authorized access.

Information required on application forms or other required documents:

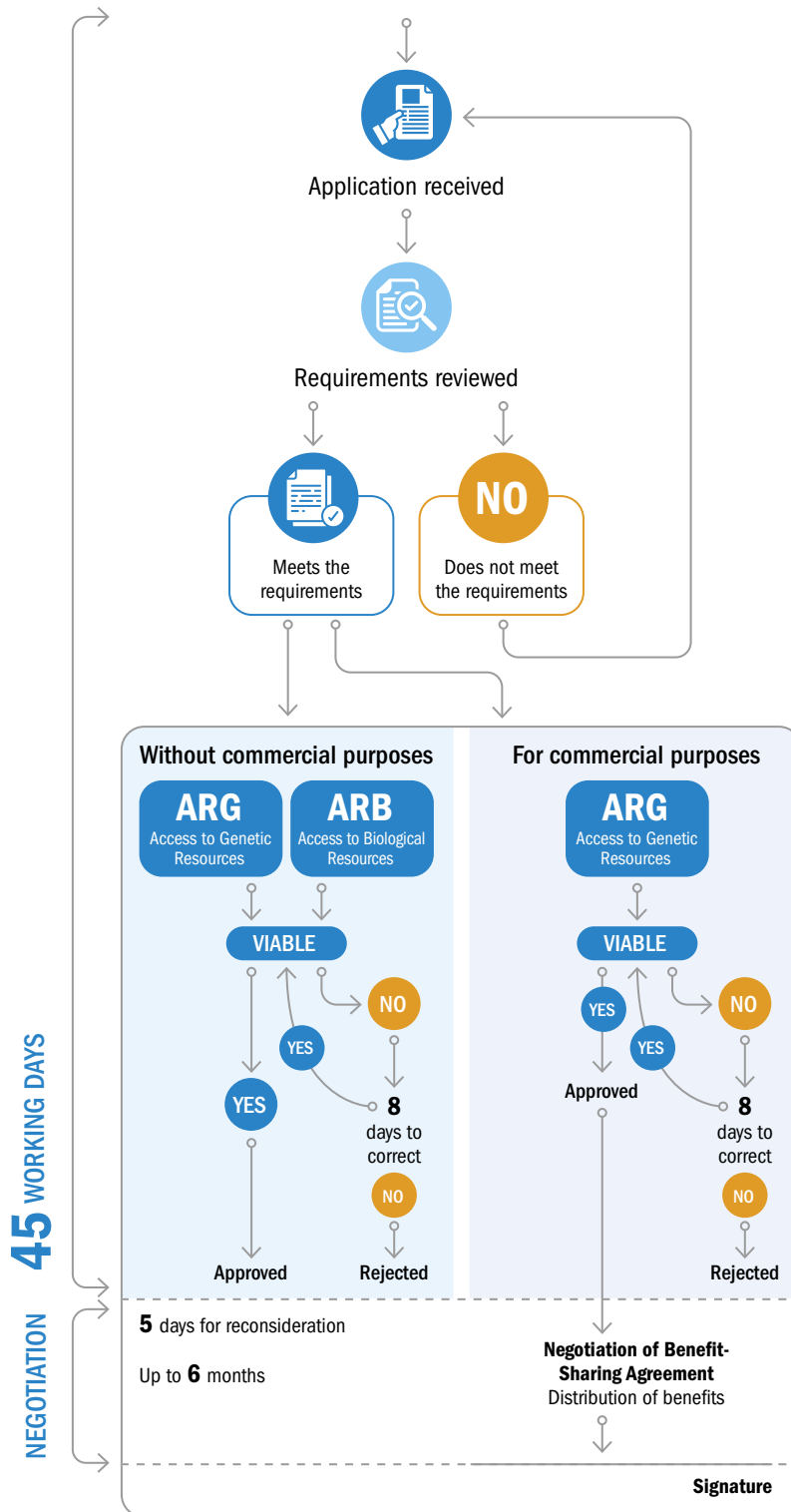
- title of the research project
- justification of the investigation
- research objectives
- methodology to be used
- biological or genetic resource to be accessed (common name, scientific name, quantity, description)
- duration of the study
- place of study
- schedule of activities
- list of people who will work on the study, indicating the person responsible for the research
- curriculum vitae, with a photograph, of each of the persons who will work on the study
- photocopies of ID or passport of all those involved in the application
 - in the case of Panamanians and residents: a copy authenticated by a notary card or passport; or a simple copy to check against its original
 - in the case of foreigners: copy of the passport, complying with the formalities of the documents coming from abroad
- accompaniment of the request by a letter of endorsement from the national counterpart entity, identifying the legal representative and providing contact information
- free PIC when required
- receipt of application fee payment in accordance with the corresponding remuneration rates.

Submit application for access

The process is illustrated in the infographic. The request (access application form and the other required documents) must be delivered to the Ministry of Environment of Panama, in the Department of Biodiversity. After receipt of the request and verification by the Biodiversity Department, there will be a term of 45 business days for its evaluation which takes into account the quantities of samples requested and the species, considering if they are threatened or endangered species. If there is any lack of information in the documents, or if the methodology requires clarification, there is a period of eight days in which to make the corresponding corrections. Once everything is correct, the permit is prepared and issued and the applicant is notified. Requests for access for commercial purposes must be accompanied by a draft Benefit-Sharing Agreement. Once the application has been reviewed, if everything is complete it proceeds to a negotiation period of the Benefit Sharing Agreement. This process would be completed with the signing of this negotiated contract.

SARGEb

ACCESS TO GENETIC AND BIOLOGICAL RESOURCES SECTION



Source: Executive Decree N° 19 of March 26, 2019 "that regulates the access and control of the use of biological and genetic resources in the Republic of Panama and other provisions"

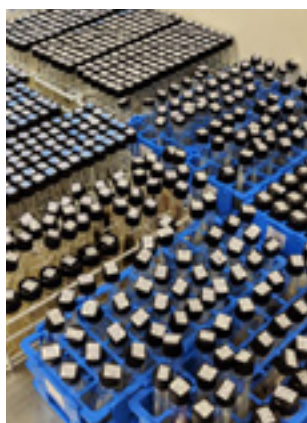
Application fees.

The current fee (year 2020) is US\$15 for each participant, researcher or collaborator being registered in the application.

Requirements of applicant in conducting an approved project:

- Present the detailed collection report, prior or attached to the export request.
- Submit a progress report on the investigation as required.
- Declare and record the origin and provenance of the resource in all publications, summaries or patent applications or other intellectual property instruments that incorporate the collected genetic resource, biological resource or both.
- Submit to the Ministry of the Environment, two (2) copies of the publications resulting from the studies, in Spanish language.
- Present certification of origin and provenance of the genetic resource, biological resource or both used in the development of the invention in all patent applications before the Ministry of Commerce and Industries and, if relevant, any patent office of the member countries of the World Intellectual Property Organization.
- Present delivery notice of the sample duplicate of the corresponding National Reference Collection, as a requirement for export, when required.

Steps in the access application process



The work consisted of collecting fungal specimens in the field, isolating and cultivating them, carrying out taxonomic determination and recording all information in databases.



A BIODISCOVERY CASE

Negotiating ABS agreements and learning about business models of industries that use genetic resources/traditional knowledge

Complementary support was provided through the Global ABS Project to the ongoing investigations of Dr Luis Mejía, researcher at the INDICASAT (Institute of Scientific Research and High Technology Services), aimed at biodiscovery of the potential of native microorganisms. The project provided funding for the hiring of a research assistant for 2017–2018: Marjorie Cedeño, a master's student at the time, who has since completed her studies and is currently in Germany pursuing a doctorate. The work consisted of collecting fungal specimens in the field, isolating and cultivating them, carrying out taxonomic determination and recording all information in databases. As a result, the collection of Panamanian micro-fungi was increased, with the information properly organized in a database. The project funding also supported the purchase of laboratory materials, routinely used in microbial collections, such as petri dishes and media, as well as office supplies. Dr Mejía was able to participate in a training course at CABI in the United Kingdom, on management of collections of microorganisms and subsequently organized and held a workshop in Panama which replicated the topics of the CABI course. This workshop was a success since it managed to gather around 60 participants, including researchers, teachers, government personnel and students, whose work involves microbiology.



EYEWITNESS STATEMENT



Dr Luis Mejía



Panama is a highly
biodiverse country ...



... Microorganisms such
as fungi and bacteria
play important roles
in the maintenance
and functioning of
ecosystems ...



"Panama is a highly biodiverse country. The species richness of plants and vertebrates is relatively well known and conservation and management strategies have been developed for threatened species in these groups and for the key ecosystems they belong to. Microorganisms such as fungi and bacteria play important roles in the maintenance and functioning of ecosystems and represent important genetic resources for biodiscoveries. Nonetheless they are poorly documented in the country and conservation and management strategies for microorganisms are not developed.

"The Global ABS Project provided support for training on microbial preservation and management of culture collections including proper registration of information for databases. This allowed an improvement in the maintenance of a collection of endophytic and pathogenic fungi isolated from various plants of agroforestry importance. The hiring of Marjorie Cedeño during the year of support was an enriching experience for her professional development as well as for keeping her working on science. The funded workshop conducted in Panama 'The Importance of Microbial Culture Collections and its Relevance for the Nagoya Protocol' reinforced the need and significance of developing Biological Resource Centres (BRCs) in the country considering guidelines of the Organization for Economic Co-operation and Development (OECD). Currently an institutional project at INDICASAT supported by the Ministry of the Environment (MIAMBIENTE) is being executed on developing a Biobank and it seeks to implement quality standards for BRCs as included in the guidelines of the OECD. The funded activities also provided an excellent opportunity for interaction of personnel from INDICASAT and UNDP as well as from MIAMBIENTE that resulted in better appreciation for the Nagoya Protocol. We consider that the gained experience through the support of the Global ABS Project has made us better prepared for realizing the potential of biodiscoveries and biotechnological applications based on microbial resources and for negotiating with potential partners following the Nagoya Protocol."

LUIS C. MEJÍA, PhD Researcher, INDICASAT-AIP, Panama

IPLCs' capacities, Biocultural Community Protocols and SDGs impacts

As part of the project activities, a pilot BCP was developed. The Ipetí Emberá community was chosen. The assistance of the UNV programme was used to apply a facilitator selection process, with key actors within the community. This resulted in the assignment of a volunteer from UNV, in the person of Mrs Sara Omi Casama, President of the Emberá General Congress of Alto Bayano. Ipetí Emberá is part of the communities that were relocated to a different zone from their original lands during the construction of the Bayano hydroelectric plant in the 1970s. The Ipetí Emberá community is a collective land property. It obtained this title in 2015, based on Law 72 of 23 December 2008 which "*establishes the special procedure for the adjudication of collective property of lands of Indigenous Peoples that are not within the regions.*" The community has subsisted during all these years, maintaining its cultural identity, but they do not have an Organic Charter, nor internal regulations or written rules. They have lived together under the rules of their own or customary law. Over the years they have had confrontations with peasant settlers who have migrated from the central provinces and have tried to invade their territory, cutting down and burning to develop cattle farms, which have affected the forests and ecosystems that the indigenous people use for their subsistence and are part of spirituality.

The authorities of the Alto Bayano General Congress and the Local Community Congress agreed to develop the BCP as an instrument of its own on uses and customs, for the protection of the territory, traditional knowledge and biological and genetic resources. The BCP was approved by the local Community Congress and contains the steps to be taken by people interested in accessing genetic resources and associated traditional knowledge within the territory of the community. The document contains an initial section with a historical review of the community, cultural practices, and worldview, as well as a description of the community's organizational

structure. Then the access procedure for interested people is explained. The interested party should go to the Alto Bayano General Congress, before the traditional authorities (Cacique or President of the General Congress) and present in writing the documentation that explains the project or investigation. The chief takes the information to the local leader (or *Noko* in the Emberá community language) and his board of directors, where they decide whether or not more information or explanations are required about the application submitted. Traditional authorities inform the community about the application, which decides whether or not to receive the applicant for a local meeting. The objectives and scope of the application will be studied.

After analysis and discussion in the community, the decision is made by the local Community Congress, through a resolution signed by the traditional authorities, and then a negotiation phase begins, involving representatives chosen by the community and the traditional authorities. During this negotiation phase, the results of the consultations and the conditions necessary to grant free PIC are presented to the members of the community. In addition, the process requires that to agree on the sharing of benefits, based on the community's uses of the resources and customs, the requests must be analysed on a case-by-case basis. The advice of experts or allies may be requested to aid in these analyses.

Because the BCP is an internal legal instrument of the indigenous people that sets out the rules for providing access to their resources and territory to external entities, it thereby strengthens the ability of the local community for its governance. The BCP and the effort to create it are specifically related to SDG 16, Peace, justice and strong institutions, promoting peaceful and inclusive societies for sustainable development, providing access to justice for all and building effective, accountable and inclusive institutions at all levels.



MESSAGE FROM AN SDG ADVOCATE

"In terms of access to genetic resources and equitable access to benefits, indigenous women, especially young women, have demonstrated in Panama that with them empowered and with the necessary tools they can lead processes in their communities, achieving consensus not only between genders but also between generations, and facilitating agreements that have allowed the adoption of the first biocommunity protocol in an indigenous territory of Panama. As a way to keep their people out of poverty, in all its dimensions, and to be able to guarantee access to shared benefits, they will be able to incorporate solutions based on nature with the people and for social well-being, which is precisely what is being sought with SDG 5, Gender equity and SDG 15, Life on land, healthy terrestrial ecosystems for prosperity based on green and blue economies, but above all, with respect for human rights, consolidating that social fabric that is the foundation of societies with a culture of peace.

"Another topic to be highlighted as enriching this local experience, is how the spaces for access to information and participation of communities are being opened, especially for women and youth from their traditional perspective, of cultural rooting with the search for scientific knowledge. In the end, the biocultural protocol is a mandatory procedure to request permission to access biodiversity in these territories, and in case it is granted, to agree on how, when, who and what. And it is by means of informed participation, in a timely manner, in decision-making processes and in consultation with all parties, that steps may be taken towards the conservation of biodiversity that brings great benefits to all with a gender lens and long-term vision."

JESSICA YOUNG, SDG advisor, UNDP Panama



SDG 5
Gender Equality



SDG 15
Life on land



SDG 16
Peace, justice and strong institutions



... In the end, the biocultural protocol is a mandatory procedure to request permission to access biodiversity in these territories ...





Uruguay

ABS from theory to practice
under the Nagoya Protocol

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SETTING THE SCENE



Uruguay sustains an important diversity of species ...



2,400

vascular plants



140

continental molluscs



226

freshwater fish



113

marine fish



71

reptiles



48

amphibians



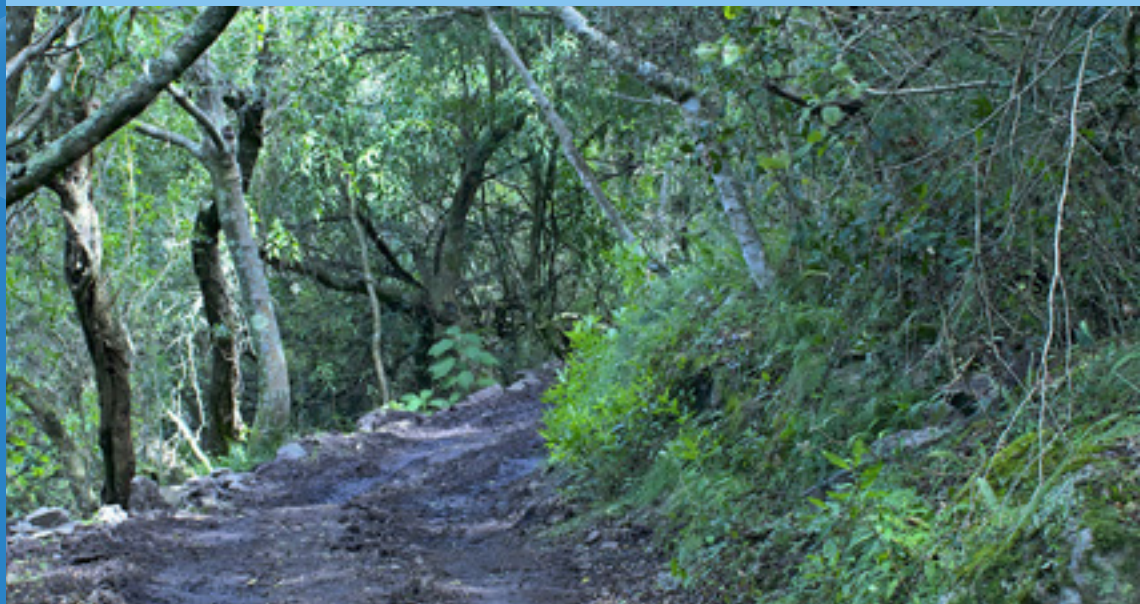
114

mammals



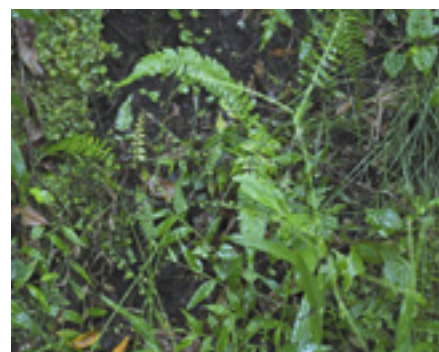
453

birds



Uruguay is located in a biogeographic transition zone of the South American continent, with an important matrix from the Pampeana Province and intrusions from the Chaqueña and Paranaense Provinces. The confluence of these biogeographical regions gives rise to natural areas interspersed with wetlands, different types of native forests (ravine, riparian, mountain, park, palm groves), and important bodies of water such as coastal lagoons. For this reason, despite its subtropical position, it harbours important biodiversity for both ecoregions and ecosystems, at both the species level and the genetic level. Because of its geography and its diversity of ecosystems and habitats, Uruguay sustains an important diversity of species, many of these of global importance in ecological, economic and social terms. From a geographical point of view, Uruguay presents a valuable ecotone between regions of terrestrial and marine biodiversity. Although it is in a transition zone and outside the sites of high species richness, many species of tropical and subtropical plants and animals find their southern limit of distribution in the territory.

The degree of knowledge of Uruguayan biodiversity is very uneven. Some groups are relatively well known, others are just beginning to be studied. Currently, the registered native species in the country include 2,400 vascular plants, 453 birds, 226 freshwater fish, 140 continental molluscs, 114 mammals, 71 reptiles and 48 amphibians. In the marine system consisting of the Río de la Plata and the Atlantic Ocean, 113 fish species have been identified. Estimates of the number of species of arthropods and native microorganisms are still incomplete.



ABS legal framework and associated traditional knowledge

Between the years 2017 and 2020, Uruguay has developed a national regulatory framework for ABS, which regulates the central aspects of the CBD and the Nagoya Protocol, among which are these highlights: access to genetic resources and associated traditional knowledge, a system of compliance measures and monitoring of the use of genetic resources and verification points. Before 2017, Uruguay did not have an appropriate legal framework to comply with the obligations assumed by ratifying the CBD and the Nagoya Protocol. This situation was considered as an opportunity by the Competent National Authority on biological diversity, the National Environment Directorate, of the Ministry of Housing, Land Management and Environment, to start building a national ABS system, which would value genetic heritage, in addition to recognizing and strengthening the associated traditional knowledge and scientific capacity existing in the country. Given this opportunity, work began with a stage of prior consultation involving the numerous actors linked to ABS, such as researchers, academia, the public sector and various groups representative of civil society.

The following strategy was drawn up:

1. Access to genetic resources would be provisionally regulated in the national territory.
2. The General Law for the Protection of the Environment, in place since the year 2000, which contained generic provisions on biological diversity, would be updated.
3. Regulations to carry out the referred law, would be put in place for the purposes of implementing an ABS system in the country.

For the first of the aforementioned points, a provisional regime of access to genetic resources was approved by the Ministry of Housing, Territorial Planning and Environment, in November 2017, which established the possibility of processing access permits, which were differentiated according to the purpose of the activity, distinguishing access for commercial purposes from access for non-commercial ones. Notwithstanding this, there was still a need to solidify the legal basis (point 2), which was achieved by approving a new wording of the old article 22 of the General Law on Environmental Protection, which thereby updated and adapted it to conform to applicable international regulations.



Uruguay is located in a biogeographic transition zone of the South American continent, the confluence of these biogeographical regions gives rise to natural areas interspersed with ...



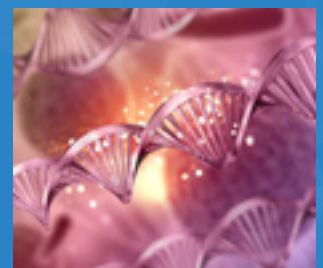
wetlands



native forests



coastal lagoons



... despite its subtropical position, it harbours important biodiversity for both ecoregions and ecosystems, at both the species level and the genetic level ...

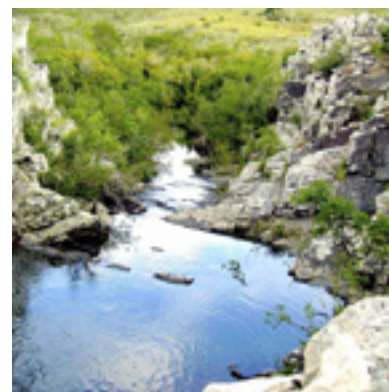
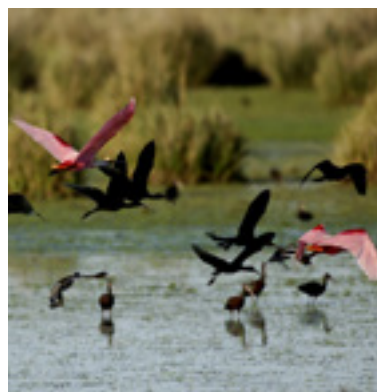
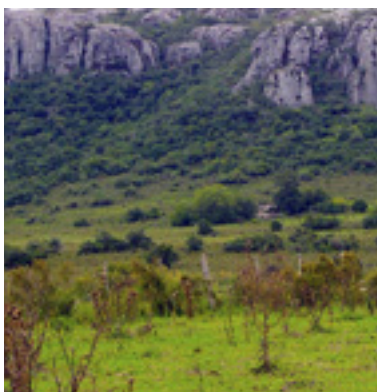


The main aspects of the new wording which entered into force on 1 January 2019:

- Access to genetic resources and participation in the benefits derived from their use were declared of general interest.
- The Ministry of Housing, Territorial Planning and Environment was empowered to coordinate compliance measures and monitor the use of genetic resources, derivatives and associated traditional knowledge, in accordance with the Nagoya Protocol.
- The aforementioned Ministry was also empowered to determine the conditions for access to genetic resources, their derivatives and associated traditional knowledge located in areas subject to the jurisdiction of the Republic, as well as the conditions for participation in the benefits derived from use of genetic resources.
- Administrative sanctions for non-compliance with foreign regulations on the matter were allowed, provided that the corresponding country was part of the Nagoya Protocol.
- The scope of the regulation excluded human genetic resources and plant genetic resources listed in Annex I of the ITPGRFA, provided they were used, indeed, for food or agriculture.

Once the General Law for the Protection of the Environment was modified, work was carried out to develop a norm to replace the Ministerial Resolution of 2017 (point 3 of the strategy), through which the provisional regime of access to genetic resources had been approved (point 1). This work took into account the input provided by the different actors who had participated in the prior-consultation stage. As a result, on 14 February 2020, the Ministry of Housing, Territorial Planning and Environment approved Ministerial Resolution No. 291/2020, which revoked the provisional regime and installed a national regulation on ABS, in accordance with the provisions of Article 22 of the General Law for the Protection of the Environment, including within its scope of application all genetic resources and derivatives, located in areas subject to the jurisdiction of the Republic, including the sequences of genetic information generated from them, and associated traditional knowledge.

Among the provisions of this regulation, the creation of a generic access permit stands out. There are, in addition, special permits, such as one that facilitates access for researchers who are part of the National System of Researchers in cases of non-commercial permits, one for transfer of genetic material abroad, and one for emergency situations, all of which must be processed by the National Directorate for the Environment. A request for access to genetic resources can be made through the website of the Ministry of Housing, Land Management and the Environment. Likewise, the regulation governs the verification criteria, having been so designated by the National Directorate of Industrial Property, of the Ministry of Industry, Energy and Mining, and provides for the creation of an Advisory Committee on Genetic Resources. With respect to sanctions, breaches to the regulation will be sanctioned according to the provisions of the general regime applicable to environmental matters in the country.



Cases of biodiscovery in Uruguay – promoting national innovation

In Uruguay, the UNDP-GEF Global ABS Project had a highly relevant impact on the valuation of biodiversity and the search for sustainable ways of using it. New sources of original resources were identified, which can be converted into productive ventures, favourably promoting local economies. The initiatives mentioned below made it clear that the country has valuable genetic resources, with potential for the food, pharmaceutical and cosmetic industries, providing evidence that supporting national research projects is the correct strategy, because they also provide us with inputs to inform public policies for both technological innovation and the conservation of biodiversity. The Global ABS Project supported two biodiscovery initiatives carried out by the University of the Republic (UdelaR), which use native species in biotechnological innovation.

- 1 Project “*Potential use of pitanga (Eugenia uniflora) in chemoprevention and treatment of cancer*”, developed by an interdisciplinary group of researchers from the North Littoral Regional University Centre (CENUR North Littoral) of the UdelaR.

It is estimated that 80% of the inhabitants of the earth depend on unconventional medicine to satisfy their health care needs, frequently using native regional plants. These also constitute a source of pharmaceutical or nutraceutical products used in conventional medicine. In this project they proposed to study the anticarcinogenic effects of the native species *Eugenia uniflora*, Myrtaceae, popularly known as pitanga as a possible resource in chemoprevention and treatment of colorectal cancer. From the chemical analysis of the essential oil (EO) of pitanga leaves, 51 terpenic compounds were identified, some of which show antineoplastic activity. *In vitro* and *in vivo* studies of the anticarcinogenic effects of EO support the potential chemopreventive effect. Indeed, low doses of EO in long-term normal colon cells inhibited cell proliferation with loss of viability, which would contribute to stopping tumour initiation. Likewise, chronic treatment with EO in the rodent-induced colonic carcinogenesis model, in addition to lacking toxicity, demonstrated a decrease in the number and size of induced colonic tumours. In colonic tumour cells, induction of lethality was evidenced by EO and decreased cell proliferation, effects that support its potential use at a therapeutic level. Future *in vivo* studies with different treatment regimens are necessary to delve into therapeutic responses.

The ABS system has facilitated access to resources for the investigation of *E. uniflora* as a therapeutic chemopreventive agent in the treatment of cancer, enhancing collaboration in the development of knowledge by providing a scientific foundation for an element of traditional knowledge. It has been essential for the transfer and increase of technological capabilities that will contribute to the propagation of human resources training for scientific research.



... the country has valuable genetic resources, with potential for the food, pharmaceutical and cosmetic industries ...



The ABS system has facilitated access to resources for the investigation of *E. uniflora* as a therapeutic chemopreventive agent in the treatment of cancer ...





... species rich in natural products previously identified as potential agents against neurodegenerative diseases:



dandelion
(*Taraxacum officinale*,
Asteraceae)



thorn of the cross (*Colletia paradoxa*,
Rhamnaceae)



... six promising species were selected with potential effect on degenerative neurological diseases such as Parkinson's disease and Alzheimer's disease:



butcher's herb (*Conyza bonariensis*)



goldenrod (*Solidago chilensis*)



carqueja (*Baccharis trimera*,
Asteraceae)



yerba mate (*Ilex paraguariensis*,
Aquifoliaceae)



kapok (*Erythrina crista-galli*,
Fabaceae)



rosemary (genus *Salvia*,
Lamiaceae)

- 2 Project "Valorization of the native flora through the characterization of species of potential interest to the pharmaceutical, cosmetic and food industry", developed by a group of researchers from the UdelaR Faculty of Chemistry.

This project aimed to evaluate the botanical resources of a region as possible raw materials for those industries. Two paths were followed. The first route was the search for species rich in natural products previously identified as potential agents against neurodegenerative diseases. In this case, two species were selected: dandelion (*Taraxacum officinale*, Asteraceae) and thorn of the cross (*Colletia paradoxa*, Rhamnaceae). These plants are rich in triterpenes such as lupeol and taraxerol, which are not possible to synthesize in the laboratory, and which will require significant amounts for effectiveness tests. In this case, specific extraction processes were designed.

The second route was developed from data and previous experiences and an exhaustive bibliographic search. Species with potential effect on degenerative neurological diseases such as Parkinson's disease and Alzheimer's disease were listed. From those, six promising species were selected. One of the aspects considered in the selection was the abundance of the natural resource and the possibility of adequate protection or use. Two of the selected species are weeds that are systematically eliminated, but difficult to eradicate completely. Such is the case for the butcher's herb (*Conyza bonariensis*) and the goldenrod (*Solidago chilensis*, two species in the Asteraceae). To have a broad panorama of possible applications, it was decided to evaluate the antioxidant capacity of these species as a screening activity. This activity is central to nutrition, cosmetics and as a gateway to the study of drugs useful in neurodegenerative diseases. The other species studied were carqueja (*Baccharis trimera*, Asteraceae), yerba mate (*Ilex paraguariensis*, Aquifoliaceae), kapok (*Erythrina crista-galli*, Fabaceae), and varieties of rosemary (genus *Salvia*, Lamiaceae) grown in the country. All species showed promising activity. In particular, the kapok alkaloids, known for their ability to influence synaptic transmission, were isolated. A simple protocol for their extraction was developed. Of particular interest is yerba mate. In the country there are reservoirs of old yerba mate plantations, which retain the characteristics of those from the Mission Period and are different from the yerba mate varieties currently cultivated. This is a reservoir that can be exploited economically for the benefit of communities and at the same time help preserve the natural resource.

Thanks to the project, a series of natural resources have been detected that are amenable to rational exploitation. Some of the species are widely used in folk medicine, making their application to the cosmetic and food industries possible. Another category of selected plant species has possible therapeutic applications, such as kapok and amaryllidaceae alkaloids.

Associated traditional knowledge in Uruguay

When the Global ABS Project began, a survey was made of the approaches reported in official documents and academic works for the “customary uses of biodiversity and associated traditional knowledge” and on the concept of “local community.” In official documents, the only reference found was in the “National Strategy for the Conservation and Sustainable Use of Biological Diversity in Uruguay 2016–2020”, which was established as a national goal in response to Aichi Goal 18, which states that *“By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.”* On the other hand, references to this goal in academic works were practically non-existent.

Contributing to this gap are peculiarities regarding the agrarian structure and cultural idiosyncrasies that differentiate Uruguay from the rest of the Latin American countries. Fully 92.6% of its territory is occupied by 41,357 commercial agricultural farms, 62% being small companies – or family farms – occupying 15% of the agricultural territory and the remaining 38% being medium-to-large companies, occupying 85% of that territory. The National System of Protected Areas (SNAP) occupies just 1.05% of the national territory (including the marine environments) and terrestrial protected areas occupy 71% of the SNAP. Of those terrestrial protected areas, 97% is within commercial farms, that is, in private territory. The country does not have any officially recognized indigenous peoples, although there are currently three groups – CONACHA (Consejo Nacional Charrúa), Clan Choñik and Hum Pampa – that claim native ancestry, but they are dispersed, found mainly in urban centres and peri-urban regions. This situation forecast great difficulty in finding a local community that would meet the necessary characteristics to develop a BCP. Despite this, a strategy was adopted to develop dialogue with various institutions of organized civil society (NGOs and social movements, among others, the Network of Native and Creole Seeds, the Network of Agroecology of Uruguay, the National Rural Development Commission, and Calamañana Cooperative), professionals who carry out activities at the territorial level (agricultural engineers, anthropologists, biologists, etc.), technicians from government agencies (General Directorate of Rural Development of the Ministry of Livestock, Agriculture and Fisheries – DGDR/MGAP, InMujeres, etc.), the Small Grants Programme of UNDP-GEF, and technicians from local governments. In addition, workshops were held with other key actors, in order to identify a local community that catered to the characteristics of maintaining traditional lifestyles and practising strategies for collective management of genetic resources and their associated traditional knowledge. From these instances of dialogue, there arose consensus that the rural population – represented fundamentally by family farmers and rural workers – possessed valuable associated traditional knowledge, just not with reference to defined local communities with a traditional lifestyle.



Fully 92.6% of the Uruguay territory is occupied by 41,357 commercial agricultural farms ...

SMALL COMPANIES - OR FAMILY FARMS

62%

MEDIUM-TO-LARGE COMPANIES

38%



... there arose consensus that the rural population – represented fundamentally by family farmers and rural workers – possessed valuable associated traditional knowledge ...



... training workshops confirmed that family farmers and rural workers are holders of traditional knowledge associated with genetic resources ...



... in geographic communities, family farmers and rural workers outline strategies to conserve biodiversity and associated traditional knowledge ...



... a project was developed that promoted awareness and empowerment of family farmers in the concepts of ABS ...



In parallel, through an agreement established with a multidisciplinary group of researchers from the UdelaR Faculty of Agronomy, the research project *"Survey of Genetic Resources with Associated Traditional Knowledge"* was developed. Both this initiative and the training workshops that were carried out with DGDR/MGAP technicians were strategic, as they confirmed that family farmers and rural workers are holders of traditional knowledge associated with genetic resources and that, in geographic communities, they outline strategies to conserve biodiversity and associated traditional knowledge. The result was a plan to develop a BCP with family farmers nucleated in the Network of Native and Creole Seeds, the Network of Agroecology of Uruguay, and the National Commission for Rural Development. At the international level, the rights of family farmers are recognized in various multilateral agreements such as the ITPGRFA (preamble and Art. 9), the CBD in its preamble and the *"Report of the Meeting of the Group of Experts representing Local Communities within the context of Art. 8 (j) and related provisions of the Convention on Biological Diversity"* (UNEP/CBD/WG8J/7/8/Add.1). In the latter, it is expressly recognized that, in the Latin American context, family farmers are part of local communities. Taking into account the above and considering that the BCP is a legal instrument developed from the target actors in order to have their rights and recognition of customary decision-making rules and procedures regarding access to associated traditional knowledge held by them, there was value in the possibility of working with family farmers.

A dialogue was started with the three organizations mentioned above on the possibility of developing a BCP. Although they expressed interest, they envisaged difficulties for the elaboration of a BCP given that their focus was on the development of the project *"National articulation for the collective governance and management of genetic diversity and its associated knowledge in Family and Peasant Agriculture in Uruguay"* in the scope of the ITPGRFA. Still, important progress was made, even though the elaboration of the BCP will have to take place beyond the time frame of this Global ABS Project.

In its place, a project was developed that promoted awareness and empowerment of family farmers in the concepts of ABS, the Nagoya Protocol and national ABS regulations by conducting 'training of trainers' workshops, in order to promote dissemination of this information and discussion, within their localities and family producer organizations. They were guided in the construction of a governance system for (agro)biodiversity in selected localities to establish Regional Community Centres for Support for Agrobiodiversity that aims to constitute an epicentre of *in situ* conservation of genetic resources of native species. In this way, at the end of the project, a path still remained open to develop in the future a BCP with the associated traditional knowledge holders in the country.



MESSAGE FROM SDG ADVOCATES

"In 2014 Uruguay ratified the Nagoya Protocol. Until then, the issue of genetic resources was not on the country's environmental agenda. The Global ABS Project of which Uruguay has been a part since 2016 gave us the opportunity to initiate actions for work on the ABS issue. The project allowed us to make advances in the generation of knowledge about our genetic resources, in the training of public officials, academic institutions and civil society organizations, and in the implementation of a national regulatory framework for ABS. The project also provided a lesson of the need to promote greater articulation among the organizations with competence in environmental, agricultural, industrial and research and innovation policies, for an effective implementation of the Nagoya Protocol at all levels. Undoubtedly, after this project, Uruguay is better positioned and with installed capacities to advance in compliance with the Nagoya Protocol. It is a subject that simultaneously addresses issues related to the protection of natural resources, the enhancement of traditional knowledge, work with local communities and vulnerable groups, research, health, industry and commerce. This forces us to approach from an integrated perspective, with an emphasis on sustainability and inclusion. The implementation of the Nagoya Protocol gives us the opportunity to accelerate the 2030 Agenda, achieving simultaneous progress in several of its SDGs, among which we can mention SDG 1 End of poverty, SDG 3 Health and well-being, SDG 9 Industry, innovation and infrastructure, SDG 12 Responsible production and consumption, SDG 14 Marine life and SDG 15 Life of terrestrial ecosystems."

ANA LAURA MELLO, National Directorate of Environment, Ministry of Housing, Territorial Planning and Environment

ALICIA AGUERRE, National Directorate of Environment, Ministry of Housing, Territorial Planning and Environment

FLAVIO SCASSO, Programme Analyst, UNDP



Ana Laura Mello



Alicia Aguerre



Flavio Scasso



SDG 1
No poverty



SDG 3
Good health and well-being



SDG 9
Industry, innovation and infrastructure



SDG 12
Responsible consumption and production



SDG 14
Life below water



SDG 15
Life on land





PACIFIC ISLANDS



Samoa



INDEPENDENT STATE OF Samoa

Biodiscovery investigations
and the framework that will lead
to ABS agreements under
the Nagoya Protocol

Authors

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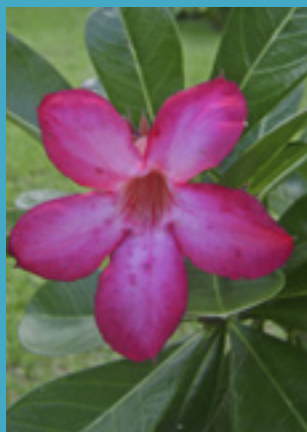
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SETTING THE SCENE



In terms of faunal
diversity, there are:



3

flying
mammals
species



51

land and
sea bird
species



16

terrestrial
reptiles



64

land snail
species



2,500

insect species



991

fish species



12

marine
mammal
species

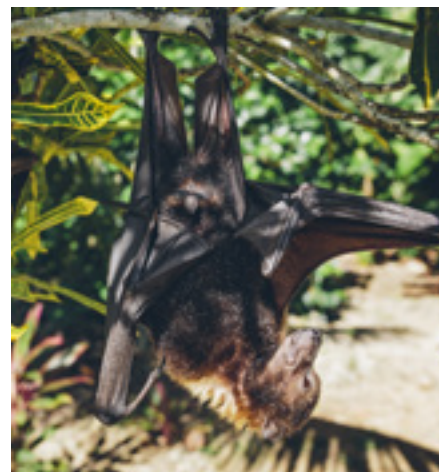


3

marine
turtle
species



The Independent State of Samoa forms the larger and western part of the Samoa Archipelago. The ancestors of the local people are known to have arrived in Samoa some 3,000 years ago. Proof of early human settlement in Samoa can be traced to shards of pottery that date back approximately 3,000 years. Samoa is part of the Polynesia-Micronesia Biodiversity Hotspot, one of 34 regions of the world where extraordinary levels of biodiversity and endemism are found. It is located in the southwest Pacific and consists of the two main islands of Upolu and Savaii. The interior of both main islands is covered with mountainous forests with a cloud forest covering the highest altitudes on Savaii. The forests play an important role in the local communities as one of the main sources of food and particularly traditional herbal medicines. The use of herbal medicine by traditional healers, as an alternative to modern medicine, is a common practice in Samoa where the barks, leaves, roots and other parts of trees are used in several concoctions for the treatment of various illnesses. Traditional knowledge associated with Samoan plants is widely applied by local traditional healers during the healing process of a wide range of sicknesses common in children and adults such as diarrhoea and bacterial skin infections. The range of treated symptoms extends to supernatural and ghost-related ailments.





Samoa's terrestrial biodiversity consists of over 3,300 terrestrial species. The country's flora consists of about 550 native flowering plants such as *Piper graeffei*, Piperaceae and *Diospyros samoensis*, Ebenaceae, which are two of the most commonly used medicinal herbs. There are more than 225 species of ferns in 95 families and 298 genera which makes it the second largest diversity of native flora in tropical Polynesia. In total, 25% of terrestrial plant species are endemic to Samoa, such as *Psychotria bristolii*, Rubiaceae, and *Manilkara samoensis*, Sapotaceae. In agro-biodiversity ecosystems, the main cultivated crops are taro, bananas, breadfruits, yams, cocoa and coconuts. In terms of faunal diversity, there are three species of flying mammals, 51 species of land and sea birds, 16 terrestrial reptiles, 64 species of land snails and at least 2,500 species of insects.

Samoa coastal and marine ecosystems are characterized by large and vulnerable reefs, (covering 490 km²). Samoa's fish fauna is regarded as among the richest in the world, with up to 991 species recorded. A recent survey recorded six new species of fish, where some were recorded for the first time in Samoa and others are new to science. There are twelve species of marine mammals that have been recorded from Samoa though it is likely that other species known in the region and among neighbouring islands could also be present. Three species of marine turtles are recorded in Samoa, though it is also likely that other species known to occur in the region could also be present. Biodiversity provides immeasurable benefits to the local people through medicine, food, fibre, ecosystem services and cultural values.



The country's flora consists of:



550

flowering plant species



225

species of ferns



In agro-biodiversity ecosystems, the main cultivated crops are:



taro



bananas



breadfruits



yams



cocoa



coconuts



The Scientific Research Organization of Samoa (SROS) is taking the lead in Samoa with regards to research on local plants and their medicinal properties.



... the main focus of the SROS Biodiscovery Centre, is to enhance the potential of Samoan natural products through biomedical, cosmetic and pharmaceutical research.



National framework on ABS and associated traditional knowledge

Samoa had already arranged provisions for biological prospecting in the late 1980s. The *Lands Surveys and Environment Act* (LSE Act 1989) and its supporting regulations, *Environment (Access for Bio-Prospecting) Regulations 1999* underlined a basic research process which has been insufficient to control arising issues throughout the decades since. In 2013, the *Environment Management and Conservation Bill* (EMC Bill 2013) repealed Part VIII of the LSE Act 1989. As part of the process of updating that bill a new draft EMC Bill was developed, which included in part IV the necessary ABS provisions. In 2020, MNRE decided to develop a stand-alone piece of legislation for ABS, becoming the draft *Genetic Resources and Associated Traditional Knowledge Management Bill*. This proposed bill incorporates a thorough bioprospecting process which will require foreign researchers – as well as local researchers under certain conditions – to obtain PIC and sign MAT before research is conducted. The ‘Genetic Resources and Associated Traditional Knowledge Management Bill 2020’ will develop into an Act that aims to strengthen the government regulating role for accessing genetic resources including governing benefit sharing arrangements.

In summary, the Global ABS project provides a great opportunity for Samoa to review our National Framework on ABS and associated traditional knowledge to ensure that the access and utilization of genetic resources from local biodiversity for commercial, research or any other purposes be carried out on the legal basis of ABS arrangements and processes between the providers of GR and the users on the basis of PIC and MAT.

Investigating the potential of local species for biodiscovery cases

The Scientific Research Organization of Samoa (SROS) is taking the lead in Samoa with regards to research on local plants and their medicinal properties. SROS have made great progress with research into traditional medicine and have procured state-of-the-art equipment for use in the analysis of traditional medicines. Traditional medicine has shown great potential under scientific research scrutiny. Dr Seesei Molimau-Samasoni, Manager of Plants and Postharvest Technology within SROS, is taking the lead in the research and analysis of traditional medicines.

In 2019, SROS launched and officially opened its Biodiscovery Centre, the main focus of which is to enhance the potential of Samoan natural products through biomedical, cosmetic and pharmaceutical research. Altogether, the Centre comprises a Chemistry laboratory, a Cancer research laboratory, a Microbiology laboratory and a Diabetes laboratory.



The Cancer research team led by Pousui Dr Fiamé Leo, including Viliamu Ah Sam and Mavaeaoaifeia Faitua, have commenced research on the anticancer properties of marine organisms. Samples are collected from reef ecosystems and extracted in the laboratories. Subsequently cancer cell lines are exposed to these extracts. Anticancer bioactivity is identified when the growth of cancer cells is significantly reduced in the presence of an extract.

The Microbiology research team under the leadership of Dr Seesei Molimau-Samasoni, including Fiaigoa Malolo, Randy Fanolua, Rosemarie Sasagi and Eeseese Moke, continues research to identify extracts, natural products and bioactive compounds with the ability to inhibit the growth of bacteria, with a specific focus on methicillin resistant *Staphylococcus aureus* (MRSA) sourced from the Moto'otua National Hospital clinical laboratory. The research of this team has also expanded to include biodiversity from soil bacteria and plant bacteria, focusing on the Actinomycete group.

The Diabetes research team, under the leadership of Ms Annie Toailoa, comprised of former members Maserota Ofoia and Gardenia Su'a and current members Aiomanu Penaia and Malone Chu Ling, continues the project by screening new plant samples focusing on α -amylase and α -glucosidase enzymatic bioassays. A list of potential candidates was identified as powerful inhibitors of α -amylase and α -glucosidase. Extracts are being purified and active components within each extract are being examined.

One impact of the UNDP-GEF Global ABS Project in Samoa has been to foster a closer working relationship between SROS and educational institutions such as the National University of Samoa and the University of the South Pacific, which has helped promote further research on medicinal plants.

Biocultural Community Protocols and SDGs impacts

The BCPs for the villages of Aopo and Faleseela will have a positive impact on Samoa's progress on SDG 8 (Decent work and economic growth), SDG 9 (Industry, innovation and infrastructure), SDG 14 (Life below water) and SDG 15 (Life on land).



The SROS Biodiscovery Centre comprises a Chemistry laboratory, a Cancer research laboratory, a Microbiology laboratory and a Diabetes laboratory.



The Cancer research team have commenced research on the anticancer properties of marine organisms.



The Microbiology research team continues research to identify extracts, natural products and bioactive compounds with the ability to inhibit the growth of bacteria ...



The Diabetes research team continues the project by screening new plant samples focusing on α -amylase and α -glucosidase enzymatic bioassays.



SDG 8
Decent work and economic growth



SDG 9
Industry, innovation and infrastructure



SDG 14
Life below water



SDG 15
Life on land



EYEWITNESS STATEMENT



Samoa has also taken pride in the completion of a database that will assist with monitoring and compliance on the use of the country's genetic resources.



"Since the Global ABS Project began in 2017 in Samoa which implements the Nagoya Protocol provisions, there was much support and interest shown from various members of the community. Although the project is locally driven and focused, it is regional and international in terms of scope and experts required which Samoa wishes to acknowledge the support from the UNDP Samoa office and the ABS Global team that assisted us to complete the ABS project key requirements.

"With support from the Global ABS project and UNDP Samoa including SPREP ABS Regional project, Samoa has now finalized the BCPs for both the villages of Aopo and Faleseela including Guidelines on Access and the Use of Traditional Knowledge Associated with Genetic Resources and a Communications, Outreach & Knowledge Management Strategy for ABS. Samoa has also taken pride in the completion of a database that will assist with monitoring and compliance on the use of the country's genetic resources. One of the biggest accomplishments of the project is the completion of the first draft of the Genetic Resources and Associated Traditional Knowledge Management Bill 2020.

"While the objective of the Nagoya Protocol is to ensure the fair and equitable sharing of the benefits arising from the utilization of genetic resources including appropriate access to GR and transfer of relevant technologies, the development of the Biocultural Community Protocols plans for Faleseela and Aopo Communities was a great opportunity for those local communities to better understand their rights to implement the ABS processes at the village level under the NP. Further, their involvement in the development of the BCPs and their positive feedback on how the villages supports the objective of ABS will see the two communities in good position to facilitate any future ABS arrangements that requires to access local GR in their customary owned lands."

CZARINA IESE STOWERS, Principal Officer – Division of Environment and Conservation, MNRE, Government of Samoa

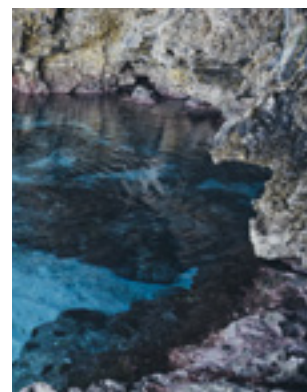




MESSAGE FROM AN SDG ADVOCATE

"It is truly an exciting time for Samoa as it prepares to review its first ever bill that will provide protection for the country's genetic resources. The Global ABS Project has yielded results not expected by many, which was bringing local communities, governmental organizations and educational institutions closer together. The Global ABS Week that was held in Apia in November 2019 was very successful as it saw all relevant stakeholders come together under a common goal, which was the protection of Samoa's genetic resources. The inclusion of the local communities of Aopo and Faleseela from day one in the project and having them involved in the decision making was a major accomplishment. Support was shown from the highest levels of government including the local communities. The research opportunities that resulted from the project have given rise to closer working relations between government ministries and organizations with educational institutions."

JEFFERY LEUNG WAI, Programme Analyst, Environment and Climate Change Unit,
UNDP Samoa MCO Office



It is truly an exciting time for Samoa as it prepares to review its first ever bill that will provide protection for the country's genetic resources.



THE GLOBAL ABS COMMUNITY

Building the Global Cooperation Framework
on Access and Benefit Sharing



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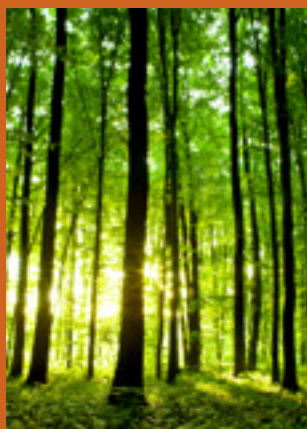
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One of the most important developments under the UNDP-GEF Global ABS Project has been the establishment of the Global ABS Community ...



... this platform provides a space for key ABS players and practitioners to share knowledge, information, experiences and best practices ...



Global ABS Community,
<https://community.abs-sustainabledevelopment.net/>



Lyudmila Glukhatarenko, healer of Sanyuki, Belarus

A community of practice on ABS

One of the most important developments under the UNDP-GEF Global ABS Project has been the establishment of the Global ABS Community, a virtual platform implemented in partnership with UNV (see sidebar). Established in February 2019, this platform provides a space for key ABS players and practitioners to share knowledge, information, experiences and best practices related to the implementation of the Nagoya Protocol on ABS and support each other in the implementation of the Nagoya Protocol. An important feature of the platform is that participants need to register as members of the community in order to access many of the different materials and recordings and actively participate in the online discussions of the community. This requirement is important to bring trust to the conversations among members and to reduce, as much as possible, the disruptive character of ill-intentioned or illegitimate users.

The Global ABS Community gathers more than 680 members ranging from IPLCs, policy makers, scientific research and academic organizations, the private sector and ABS experts facilitating knowledge sharing and experience exchange through a global cooperation framework on ABS. Within the Global ABS Community, knowledge and information is built upon on-site and online activities of the Global ABS Project and community members are welcome and encouraged to submit resources to further nurture the knowledge base of the community and continue to strengthen mutual engagement. Although the activities implemented by the Global ABS Community, from online events to the live streaming of trainings, workshops and on-site conferences responds to local, regional and global needs and requirements of project-countries, their value is amplified by an inclusive approach. Current content on ABS and tools to strengthen capacities generated within the project are made available globally and thus accessible for all community members, creating a multiplier effect beyond the Global ABS Project countries.

In 2020, the community of practice added two new services, the Global ABS Legal Clinics and the Global ABS Business Facility, to further expand the support provided by the platform into aspects related to the development of ABS national legal frameworks, contract drafting, development of ABS business models and ABS value chains. Finally, the Global ABS Community is implemented in partnership with the CBD and The Alliance of Bioversity International and the International Centre for Tropical Agriculture in collaboration with the National Biodiversity Strategies and Action Plans Forum and the UNDP e-learning programme, Learning For Nature, contributing to the achievement of the UN Sustainable Development Goals and the three objectives of the CBD (conservation of biological diversity, sustainable use of components of biological diversity and fair and equitable sharing of the benefits arising out of the use of genetic resources).



Carefully mapping out their biological resources

GLOBAL ABS COMMUNITY

By the numbers



Thematic areas of the Global ABS Community

Content, activities and discussions presented by the community of practice virtual platform are organized and curated in the following five thematic areas:

1 ABS & ITPGRFA

This thematic area, developed and curated in partnership with Bioversity International, explores synergies and mutual supportiveness by focusing on:

- analyzing, proposing and testing options for developing laws, regulations and administrative procedures that take into consideration the overlaps between the Nagoya Protocol and the ITPGRFA
- facilitating collaboration among different agencies in charge of implementing each convention at the national level
- providing advice and guidance to plant researchers and breeders working in public and private organizations who seek to obtain access to plant genetic resources for their regular work but face uncertainties about which regime should be applied to for access
- increasing the capacities of legal advisers and practitioners working in public agencies and private companies to work under the ABS systems inspired both by the Nagoya Protocol and the ITPGRFA.

2 ABS Legal Frameworks

Content curated in this thematic area provides information and support to the development of ABS legal frameworks, regulations, contract drafting, the ABS Clearing House Mechanism, genetic resources monitoring, intellectual property agreements and synergies with others treaties and organizations dealing with ABS. All is in support of national and regional implementations of the Nagoya Protocol.

3 Traditional Knowledge

Content presented in this thematic area addresses topics related to IPLCs, thereby providing a space to link and generate trust between users and providers of genetic resources and associated traditional knowledge. Associated traditional knowledge is at the core of genetic resources access and the Nagoya Protocol recognizes IPLCs as the guardians and custodians of genetic resources and associated traditional knowledge. During the implementation phase of community of practice virtual platform, the activities implemented under this thematic area were focused on linking and developing IPLC-ABS networks to generate ABS capacities from indigenous peoples for indigenous peoples. An important highlight was the organization of the International Workshop on Traditional Knowledge Protection organized in the city of Quito, Ecuador where IPLC members from the Latin American and the Caribbean region convened to discuss and strengthen ABS capacities related to the protection of associated traditional knowledge and genetic resources.

4 Sustainable Development Goals

ABS is genetic resources for sustainable development. Content curated in this thematic area allows exploration of the linkages and potential of genetic resources and associated traditional knowledge as accelerators of the SDGs and how the sustainable use of genetic resources is linked to gender equality and the conservation of the marine genetic resources and land genetic resources and how genetic resources can boost economic development.

5 Private Sector & Industries

Content curated in this thematic area provides information and examples of key industries using genetic resources. A user can obtain an overview of market dynamics and development of ABS value chains and explore major trends in R&D and demand of genetic resources globally. The examples presented in this thematic area continue to receive considerable attention from project countries and community users because best-practice examples are necessary to continue to promote the Nagoya Protocol, not as an exception, but as the rule for

sustainable ABS practice. Activities available under this thematic area have focused on showcasing biodiscovery cases and the steps private sector members need to follow when accessing genetic resources and associated traditional knowledge. Additionally, the best country examples are showcased providing an overview to major industry members on countries with clear ABS regulations and procedures and demonstrating how other countries can replicate these systems to boost the economic potential of genetic resources.

Forums section

Global ABS Community users can use the tools in this section of the platform to connect, exchange and engage with each other not only by sharing learning opportunities and good practices on ABS implementation. They can also ask questions to experts, start discussion threads, comment

on knowledge products, share opinions with the members of the community and advertise events. Users can interact with each other through the private messaging system provided by the platform, which enhances the ABS network and the global cooperation framework on ABS.

Knowledge repository

A wide range of ABS knowledge products are available for community members through the platform. Among them, webinars, recordings and presentations, publications, manuals, reports, guidelines, case studies and other materials shared during workshops and trainings. Members can

propose, develop and share articles and knowledge products, moderated by experts on thematic areas, who provide technical support in different topics as requested. Currently, even though there are knowledge products available in five languages, most of the content of the repository section is in English.

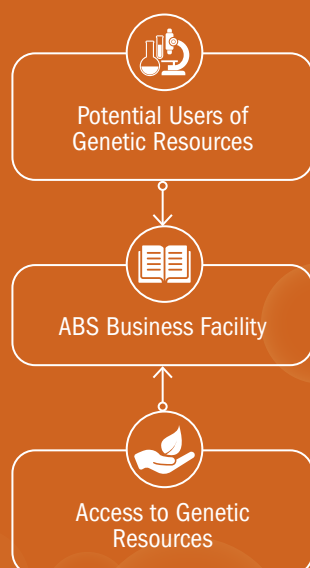




The Global ABS Legal Clinics provides support and addresses issues and complaints related to indigenous issues and local communities ...



The Global ABS Business Facility provides support to researchers, private companies and industry leaders ...



Services section

In October 2019, after a series of requests and demands expressed by global ABS stakeholders, the Global ABS Community incorporated two new services to its menu which will streamline ABS requests from project and non-project countries, expanding the legal and business support to the ABS community at the click of a button:

1 The Global ABS Legal Clinics

Developed originally to support IPLCs involved in the negotiation of ABS contracts and agreements, this service aims to serve as an ombudsman-like entity that provides support and addresses issues and complaints related to indigenous issues and local communities. This service also expands support to local and regional governments involved in the finalization of their ABS legal systems or in the negotiation of ABS agreements. The final aim of the service is to ensure that ABS negotiations are fair and create a level playing field in which users and providers of genetic resources and associated traditional knowledge can deal and negotiate under equal conditions. The legal clinics also provide legal support to governments who may have queries with regard to the implementation of their ABS legal frameworks and who may need support in the negotiation of ABS agreements.

2 The Global ABS Business Facility

The facility provides support to researchers, private companies and industry leaders seeking to access and use genetic resources and associated traditional knowledge under the provisions of the Nagoya Protocol ensuring the fair and equitable sharing of benefits. The aims of the facility include creating and strengthening coordination among all facets of access and use of genetic resources, generating partnerships between users and providers of genetic resources and associated traditional knowledge, and facilitating and promoting the development of the bioeconomy, economic potential and well-being of providing countries. A special focus of the facility is on support to micro, small and medium enterprises (MSMEs) that are using biological resources for the development of products used by the cosmetics, food, pharmaceutical and agriculture industries. Finally, the facility also identifies opportunities for MSMEs to support the development of value chains with biological resources that can be transformed into novel and innovative high value products through biotechnology.

Parties interested in either the Global ABS Legal Clinics or the Global ABS Business Facility need to complete an online request form and submit it through the Global ABS Community website. After an evaluation of the request the administrators of the community will put the requesting party in contact with the most suitable expert to support the enquiry.

Building a global cooperation network on ABS

Perhaps one of the highlights that best reflects the potential and impact of the Global ABS Community to promote cooperation among users and providers of genetic resources and reach a greater number of stakeholders around the world was the Global ABS Conference 2020. This online event, organized by the Global ABS Project to commemorate the tenth anniversary of the adoption of the Nagoya Protocol, succeeded in bringing together national authorities, indigenous peoples and local communities, researchers, the private sector, donors and organizations working on ABS to discuss the vision of “**the ABS we ALL need**” in preparation for the post-2020 global biodiversity framework.

The virtual conference, conducted in partnership with the Secretariat of the Convention on Biological Diversity and with the collaboration of the Governments of Japan and Jordan, was launched on 29 October 2020 and continued with sessions throughout November (on the 4th, 11th, 18th and 25th).

Over this five-week period, 888 participants from 115 countries learned from the experiences of 59 panelists from all the different ABS rights holders and stakeholders, from provider and user countries and from developing and developed countries. Among them were national authorities and focal points from Argentina, Belarus, Brazil, Dominican Republic, Ecuador, India, Jordan, Kenya, Madagascar, Samoa, South Africa and Viet Nam. Indigenous peoples and local communities were represented by leaders of communities and nationalities such as the Tsáchila peoples, the Endorois Welfare Council, and organizations such as the International Indigenous Forum on Biodiversity, the Network of Indigenous Women for Biodiversity – Latin America, Indigenous Network on Tourism in Mexico (RITA), Voices for BioJustice and Natural Justice. Users of genetic resources were represented by firms such as Provital and DSM Nutritional Products, and the International Federation of Pharmaceutical Manufacturers & Associations.

Elisabeth Maruma Mrema, Executive Secretariat of the CBD, also participated as the main speaker, together with six former negotiators of the Nagoya Protocol and speakers from organizations such as the European Commission, Leibniz Institute DSMZ (German Collection of Microorganisms and Cell Cultures), Aix-Marseille University, the Secretariat of the Pacific Regional Environment Programme (SPREP), the Forum for Law, Environment, Development and Governance (FLEDGE), The Alliance of Bioversity International and the International Centre for Tropical Agriculture and the Union for Ethical BioTrade (UEBT). Statements and messages of support were sent by such high-level authorities as H.R.H. Princess Basma Bint Ali of Jordan; Shinjiro Koizumi, Minister of the Environment of Japan; Barbara Creecy, Minister of Environment, Forestry and Fisheries of South Africa; H.E. Nabil Masarweh, Minister of Environment of Jordan; Inger Andersen, Executive Director of UNEP; Carlos Manuel Rodriguez, CEO and Chairperson of the GEF; Kent Nnadozie, Secretary of the ITPGRFA (FAO) and Adriana Dinu, Deputy Director, Bureau for Policy and Programme Support, UNDP.

The content of the Global ABS Conference 2020 amounted to a total of 21 hours of streamed video, with simultaneous interpretation in five languages (English, Spanish, French, Arabic and Russian).

“The virtual conference was very well received. It helped to encourage dialogue between key ABS players and created a space in which to identify, express, and recognize the needs of right holders and stakeholders vis-à-vis the post-2020 Biodiversity Strategic Framework. But it also promoted a sense of community among all ABS players, including multilateral agencies and the private sector, which have opened doors to keep working together on further developments to make ABS the rule.”

ALEJANDRO LAGO, Manager, UNDP-GEF Global ABS Project



... stakeholders from Latin America, and especially those from Ecuador, have been particularly receptive and became active users of the platform, contributing to enrich the knowledge repository section with high-quality resources that mainly focused on IPLCs.



... indigenous communities and nations from Ecuador, such as the Kichwa and the Tsáchila, had a leading role in the Global ABS Community.



The Global ABS Community experience

At its first stage of development, the Global ABS Community aimed to address the main topics of interest of a wide range of ABS stakeholders from Africa, Asia, Europe, South Pacific and Latin America. But among them, stakeholders from Latin America, and especially those from Ecuador, have been particularly receptive and became active users of the platform, contributing to enrich the knowledge repository section with high-quality resources that mainly focused on IPLCs.

This proactivity echoes the progress made in the implementation of the Nagoya Protocol by the Global ABS Project in Ecuador. The Project engaged local partners such as the Ministry of Environment and Water, Ecuador (MAAE), the National Service of Intellectual Rights (SENADI), Project for Amphibian and Genetic Resources Conservation (Proyecto PARG) and the Secretariat of Higher Education, Science, Technology and Innovation (SENESCYT), which supported and encouraged several activities through the community of practice.

Members of indigenous communities and nations from Ecuador, such the Kichwa and the Tsáchila, had a leading role in the Global ABS Community. They took part in online and on-site activities to strengthen IPLC capacities in the protection of traditional knowledge associated to genetic resources and to exchange local case studies and good practices on ABS.





Publications on the medicinal plants of indigenous peoples with potential for bioprospecting and on biodiversity management with a gender approach were shared.



Sumak Bastidas



The Global ABS Community also contributed to position topics such as the conservation of endangered species, such as the Ecuadorian amphibians, and the great potential that their secretions have for the research and development of biomedicine.



With the support of national institutions and the project's coordination by UNV, highly committed indigenous peoples and nationalities from Ecuador have not only taken part as main speakers in webinars related to biocultural community protocols, assessments of KAP (Knowledge, Attitudes and Practices) and UNV activities. They have also led online sessions on the protection of traditional knowledge under the Nagoya Protocol and on the contributions of traditional knowledge to the COVID-19 response. Publications on the medicinal plants of indigenous peoples with potential for bioprospecting and on biodiversity management with a gender approach were shared. And last, but not least, a course specially tailored for leaders of indigenous peoples to strengthen capacities on ABS and raise awareness on the fundamentals of Nagoya Protocol was made available through the Global ABS Community, which in turn was supported by the UNDP-GEF ABS Project Ecuador in partnership with the MAAE, SENADI, Proyecto PARG, SENESCYT and the Amazon Regional University (IKIAM).

"The Global ABS Community has been a space to share and exchange the experiences from the progress of the UNDP-GEF ABS Project in Ecuador, benefitting the knowledge of the region on topics related to IPLCs and the measures that Ecuador has put in place to protect traditional knowledge associated with biodiversity (biological and genetic resources).

"Additionally, the community of practice allows a horizontal and open dialogue through the discussion forums on the relevance of BCP in Ecuador, and the important role of women in the dissemination and the protection of traditional knowledge under the Nagoya Protocol. Furthermore, the platform has consolidated the contributions of United Nations Volunteers regarding IPLCs, building trust with the communities, strengthening the leadership of women and youth, and raising awareness on the value of traditional knowledge, their collective intellectual rights, and the fair share of the benefits within the ABS regime, as well as the sustainable use of biodiversity.

"The Global ABS Community also contributed to position topics such as the conservation of endangered species, such as the Ecuadorian amphibians, and the great potential that their secretions have for the research and development of biomedicine.

"Finally, Ecuador has made available through the Global ABS Community an e-learning course on traditional knowledge and the Nagoya Protocol, containing modules for IPLCs, researchers, private companies, scientists, students and academia interested in the ABS thematic areas, not only in Ecuador but in all Latin America, and thus contributing to achieving the SDGs and leaving no one behind."

SUMAK BASTIDAS, former National Volunteer Coordinator of the UNDP-GEF ABS Project in Ecuador

Abbreviations and Acronyms

ABS	Access and Benefit Sharing	MAT	Mutually Agreed Terms
BCP	Biocultural Community Protocol	NBSAP	National Biodiversity Strategy and Action Plan
CBD	Convention on Biological Diversity	NGO	Non-governmental organization
CHM	Clearing House Mechanism	PIC	Prior Informed Consent
COVID-19	Coronavirus disease 2019	SDG	Sustainable Development Goal
GEF	Global Environment Facility	UNDP	United Nations Development Programme
IPLC	Indigenous People and Local Community	UNEP	United Nations Environment Programme
IRCC	Internationally Recognized Certificate of Compliance	UNV	United Nations Volunteers
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture		

Acknowledgements

This book underscores the importance of using genetic resources in accordance with the Nagoya Protocol to ensure that they contribute to the 2030 agenda for sustainable development. The multiple findings, insights and perspectives presented in this book would not have been possible without the support provided by the following UNDP colleagues: **Handan Bezci, Claudio Chiarolla, Tashi Dorji, Alexandra Fischer, Gabriel Jaramillo, Martha Naanda, Pakamon Pinprayoo, José Rayos and Petra Valastinova.**

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We also owe a special debt of gratitude to the eyewitnesses and SDG advocates who provided helpful and insightful comments and context that contributed to the understanding of each chapter: Eyewitness (in order of country reports):

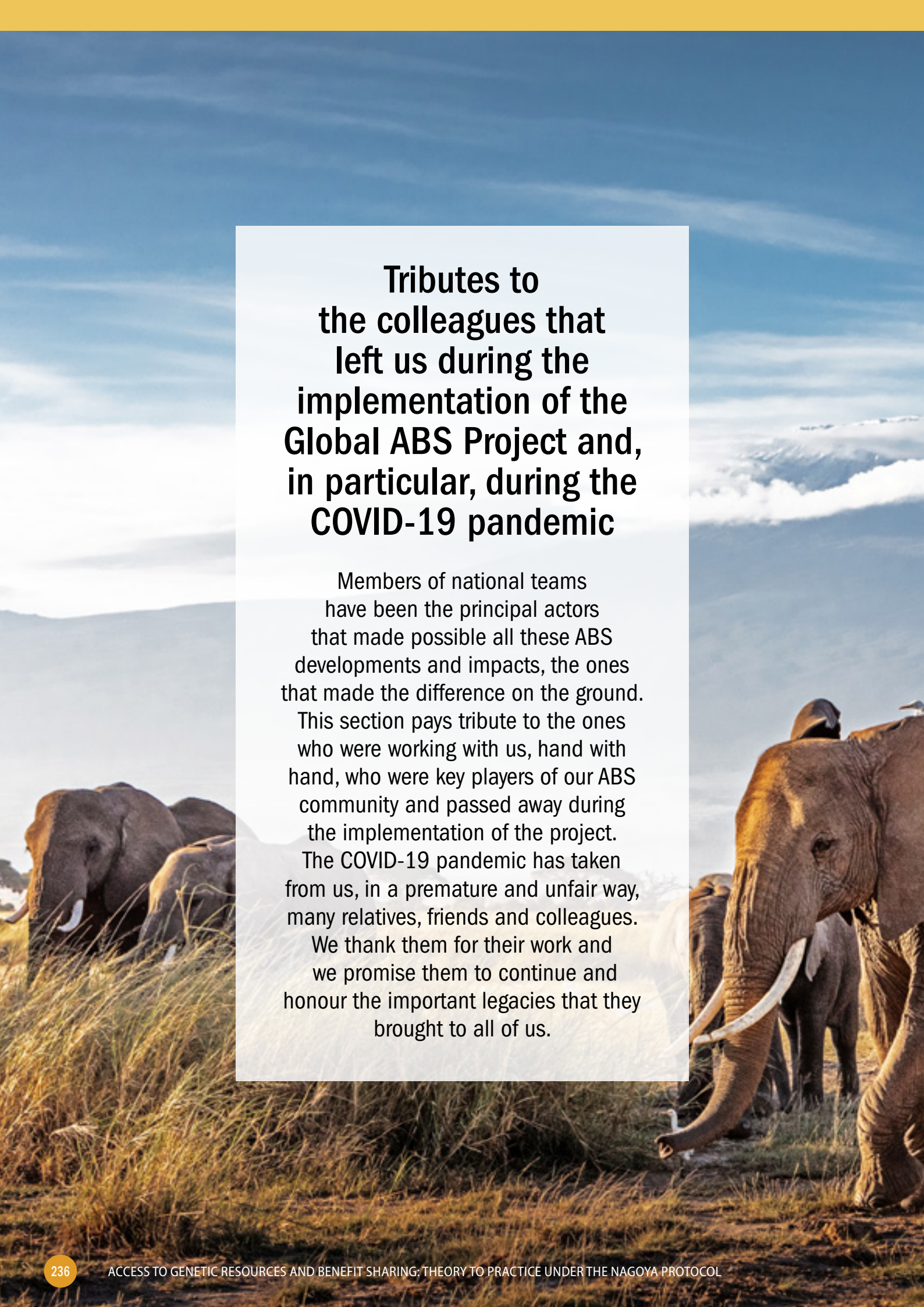
Marks K. Ditlhogo, Tshagofatso Lejowa and Masego Mmipi (Botswana), **Abdou Azali Hamza** (Comoros), **Muko Bali** (Ethiopia), **Luke Otipi** (Kenya), **Stanley Peterson, Collin Louw, Dawie De Villiers** and **Lactitia Tshitwamulomoni** (South Africa), **Bilal Qtaishat and HRH Princess Basma Bint Ali** (Jordan), **Magda Abubaker Osman and Abd Elhakeem Abdeen** (Sudan), **Sopheha Chhin, Ms Pi and Mr Chamroeun** (Cambodia), **Vinod B. Mathur** (India), **Gulnara Sitpayeva and Firuz Ibrohimov** (Kazakhstan), **Gurdial Singh Nuar, Ken Mutang and Linda Lagang** (Malaysia), **Tserennyam Lundaa** (Mongolia), **Kenneth Sein** (Myanmar), **Martin Pulodav and Neimatullo M. Safarov** (Tajikistan), **Ly Phu Chiu** (Viet Nam), **Elvana Ramaj** (Albania), **Elena Makeyeva** (Belarus), **Michaela Bonafina** (Argentina), **Carlos Augusto Ospina Bravo and Gladys Ines Cardona Vanegas** (Colombia), **Diana Fernández Fernández and Brian J. Doyle** (Ecuador), **Carlos Henríquez** (Honduras), **Luis C. Mejía** (Panama) and **Czarina Iese Stowers** (Samoa).

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We recognize and thank the following photographers and organizations for these specific images: [Kenya] **Dr George Omondi Adino, Kenya Snake Research**, black mamba, p 38, and snake on the ground, p 40. [Jordan] **Royal Marine Conservation Society of Jordan – JREDS** marine life and **Royal Botanic Garden – RBG** plants. [India] **Vipul Maurya** opening, p 82–83; **Dr Amit Kumar** sidebar top, p 84, right top, p 85, and right bottom, p 88; **Siddharth Nair** sidebar bottom, p 84; **G. Krishna Prasad** right second-from-top, p 85; **Suraj Subba** right middle and bottom, p 85, and **UNDP CO India** top and bottom-centre, p 84, right second-from-bottom, p 85, top, p 86 top and middle, p 88. [Malaysia] **Sarawak Biodiversity Centre** two, p 103, one, p 104, and two, p 105. [Mongolia] **UNDP-GEF Global ABS Project Mongolia** all, p 106–115. [Tajikistan] **Sukhrob Irgashev** opening, p 124–125, top, bottom, sidebar flower, p 129, and p 131; **Neimatullo M. Safarov** p 126. [Albania] **Daniela Tola** top and sidebar, p 144, bottom right, p 144, four at right, p 147, two lower sidebar and two bottom, p 148, and middle right and bottom, p 149. [Belarus] **Viktar Malyshchyts** opening, p 150–151, top image and top sidebar, p 152, top left, p 156, and bottom, p 157; **Anatoliy Kulak** sidebar bottom, p 152, and top right pair and bottom sidebar, p 155; **Nataliya Dorosh** top sidebar, p 154, and central, p 155; **Alfred Mikus** sidebar middle, p 154, and second-from-the-top left, p 156; **Ihar Makhavik** sidebar bottom, p 154; **Sergey Sauchuk** left middle, p 156; **Kseniya Panteley** second-from-the-bottom left, p 156, and **Anna Bychenko** bottom left, p 156. [Colombia] **SINCHI Archive: Néstor Roncancio** top sidebar, p 170, and right middle, p 175; **Jorge Contreras** sidebar bottom, p 170, sidebar top, p 173, and sidebar middle, p 174; **Paola Aponte** bottom left, p 171, sidebar top, p 174, and top right, p 175; **Paul Peña** right top and bottom, p 172; **Ivan Montero** second-from-top right, p 172; **Nicolas Castraño** top, p 173, and top centre, p 174; **Esteban Carrillo** bottom sidebar, p 173, and bottom, p 174; **Mariela Osomo** second-from-the-top right, p 175, and **MinAmbiente Archive: Gustavo Zapata Ferro** bottom right, p 171, bottom, p 173, and sidebar bottom, p 174, and **Federico Mosquera Guerra** top right, p 174, and second-from-the-bottom right, p 175. [Ecuador] **INABIO** portraits of Dr Fernández and Dr Doyle, p 182, and portraits of Ms Naranjo and Mr Espín, p 185; **Proyecto Global ABS PNUD-GEF Ecuador** top, p 182, and top right, p 183, and **Paola Guijarro** main, p 183, and main, p 184. [Global ABS Community] **UNDP-GEF Global ABS Project Mongolia** opener, p 224–225; **Ivan Yaryvanovich** top, p 226; **Erdenechimeg Erdene**, **UNDP-GEF Global ABS Project Mongolia** upper right, p 227; **UNDP-GEF Global ABS Project** top, p 232; **Alvaro Hoyos**, **Samoa UNDP** bottom centre, p 232; **Global ABS Community** bottom right, p 232, top three and sidebar top and portrait of Ms Bastidas, p 233; **Proyecto Global ABS PNUD-GEF Ecuador** sidebar upper and lower, p 232.

The background of the page is a photograph of a savanna landscape. In the foreground, there are several elephants, including a large one on the right with prominent tusks. The ground is covered in dry, yellowish grass. In the background, there are rolling hills and a blue sky with some clouds. A large white rectangular box is centered on the page, containing the main title and the tribute text.

Tributes to the colleagues that left us during the implementation of the Global ABS Project and, in particular, during the COVID-19 pandemic

Members of national teams have been the principal actors that made possible all these ABS developments and impacts, the ones that made the difference on the ground. This section pays tribute to the ones who were working with us, hand with hand, who were key players of our ABS community and passed away during the implementation of the project. The COVID-19 pandemic has taken from us, in a premature and unfair way, many relatives, friends and colleagues. We thank them for their work and we promise them to continue and honour the important legacies that they brought to all of us.

Shama Meki

Ms Shama Meki was the Project Associate who was attached to the implementation of the UNDP-GEF Global ABS Project at the Sudan CO level. Ms Shama had contributed not only to the good financial management of the project, but also to the creation of outstanding relationships with government counterparts and key ABS partners, a fact which enabled strong ownership of the project's results by the national partners. Her support also contributed to facilitate clearances and endorsements and implementation of ABS policies and legislation.



Shama Meki

Marle Aguilar

Ms Marle Patricia Aguilar Ponce was a biologist who worked as Environment Analyst under the Biodiversity Direction of the Ministry of Environment in Honduras. She was the national focal point of the Nagoya Protocol and the coordinator of the UNDP-GEF Global ABS Project in Honduras from 2017 until March 2021.

During the implementation of the Global ABS Project, she led the establishment of the Interinstitutional Committee on Biocultural Heritage that promoted the organization of the first National Congress on Biocultural Heritage in 2018, a space for participatory exchange, analyzing the current situation, and identifying mechanisms for the national protection and safeguarding of traditional knowledge, practices and expressions, establishing a dialogue between the different actors, in particular with indigenous peoples and local communities. The project also supported the organization of the first two National Congresses on Biodiversity (Honduras Biodiversa) in 2017 and 2019, all the events of which had the prominent participation of different stakeholders.

She was a very dedicated professional and committed person, always persevering with a spirit of change and service, who, with her professional demands, love for biodiversity and intense work for conservation of biodiversity and cultural heritage, leaves us an example and a legacy to follow.



Marle Aguilar





Zoidi Carpio

Zoidi Carpio

Ms Zoidi Marie Carpio Pérez studied clinical psychology and spent 11 months working in the UNDP-GEF Global ABS Project in the Dominican Republic as a UNV technical assistant in communications and volunteering. She supported the development and implementation of an outreach campaign on genetic resources and traditional knowledge, and also the training of trainers in the ABS theme for national volunteers.

The team of the Global ABS Project in the Dominican Republic learned a lot from Zoidi, her strength transmitted to them her very familiar way of working, because working with Zoidi was a wonderful experience. She was a young woman full of enthusiasm who brought that joviality, empathy and dedication to the implementation of the activities of the project, which created an excellent training environment for young people and a means to reach communities from a different and dynamic perspective, full of simplicity.

Her example and actions sowed hope. With joy and her own wings, she flew through life, not without leaving indelible marks on the souls and hearts of all those who surrounded her. She brought light, enthusiasm, joy, empathy, integration, adventures and beautiful moments, so we will remember her. She left us this impressive testimony of her experience as UNV in the project:

“The Global ABS UNDP-GEF Project positively impacts development, in a multidimensional way, not only of local communities, but of the entire country. This Project contributes to strengthening the country’s capacity to protect and regulate its biological resources, as well as to preserve its greatest heritage, which is its people and its culture.





"In the Dominican Republic, local communities, mostly peasant and peri-urban, are rich in traditional knowledge and produce natural medicines, cosmetics and personal care products. These products are often in high demand by people in the community so their use is recurrent. However, all this knowledge is at risk of being lost, since those who hold it and put it into practice are elderly people, and the exodus of youth to urban areas is increasing. This knowledge no longer passes from generation to generation in the same way it did a few decades ago.

"Going to some of these communities, sensitizing them about the Nagoya Protocol and their rights to a fair and equitable sharing of the benefits derived from the use of their traditional knowledge, and working hand in hand to protect this knowledge and its products, has provided hope and growth opportunity. The Ministry of Environment and the UNDP carry a guarantee of protection, and provide a channel for the development of the communities through this project. And it is precisely that hope, which throughout the work is materializing, that has fueled my passion to serve and has helped me to consolidate my vocation.

"At the end of my duties in this Project, I take with me many learnings, experiences, a new family and a more open mind, among other things. However, what I take with me the most is the satisfaction of having contributed to the dissemination of such noble and necessary work, such as the one promoted by this Project. Our cultural and natural heritage is guaranteed for the future, the value of our traditional knowledge and of our local communities is recognized, the work of our peasant women in making these products, the value of our history, and all this is translated into hope and development.

"Being a UN Specialist National Volunteer has been more than an honour for me, contributing to peace and the sustainable development agenda fills me with pride and is the motivation to continue being a young agent of change. Being with UNV has defined the path I want to travel, it has materialized goals and has filled me with more dreams to achieve, all oriented to be part of the solution, of the change for which projects like this work, the change towards a sustainable world leaving no one behind."







UNITED NATIONS DEVELOPMENT PROGRAMME

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