

The contribution of Access and Benefit-Sharing (ABS) to the Sustainable Development Goals

Lessons learned and best practices



IMPRINT

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Introduction

These are important times for biodiversity. Despite the global pandemic in 2020, the process towards the adoption of a global biodiversity framework at the 15th meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD), now scheduled for 2021, is progressing. In addition, 29 October 2020 marked ten years since the adoption of the Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation.

Against this background, the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety (BMU) and the German Federal Agency for Nature Conservation (BfN) have supported a research project to highlight how access to genetic resources and benefit-sharing (ABS) contributes to conservation and sustainable use, as well as to the United Nations Sustainable Development Goals (SDGs).

The project was carried out by Geo Media, the Institute for Biodiversity Network (ibn) and the Union for Ethical BioTrade (UEBT). It features a selection of ABS cases from different regions of the world. These cases, which involve the use of genetic resources for commercial or scientific purposes, highlight lessons learned, as well as emerging good practices and contributions to the SDGs.

To date, 130 Parties to the CBD have ratified the Nagoya Protocol. However, many countries are still developing ABS measures or are in early stages of implementation. Hence there is relatively limited experience with putting ABS in practice in light of new obligations under the Nagoya Protocol. As a result, it remains a challenge to identify cases sufficiently advanced to be able to draw lessons and to assess contributions to the SDGs.

For this reason, the relevance of ABS principles and measures in cases featured in this project differs, as does their approach to ABS in evolving legal frameworks. Cases show the range of ways in which ABS elements arise - from provider countries with no ABS measures and ABS measures adopted prior to the Nagoya Protocol, to provider countries with ABS measures based on the Nagoya Protocol still in early stages of implementation. Yet, in all these cases ABS principles were followed. In a number of these cases, actors involved were precursors of ABS implementation and have contributed to the identification of good practices. The cases also demonstrate that ABS has contributed to the SDGs in a variety of different ways.

The first output of the project consisted in an overview of key ABS related elements for each of the twenty cases selected by the project. It was made available in the form of a handout on the occasion of the global conference organized by the Secretariat of the CBD and the United Nations Development Programme (UNDP) to celebrate the ten-year anniversary of the Nagoya Protocol. It is available at: <https://bit.ly/2ZhuJOe>.

This document is the final project output. Section I examines in further detail eleven of the twenty cases covered by the project. The case studies provide a description of the context in which ABS partnerships were developed in different regions of the world, including actors involved, the resources accessed and the process which led to ABS arrangements. Lessons learned and contributions to the SDGs are also examined for each of these cases.

Section II provides a synthesis and an analysis of key findings and conclusions with respect to lessons learned from these cases, emerging good practices and the contribution of ABS to the SDGs, based on information gathered from all the cases. These may provide useful considerations in future ABS implementation.

Marula oil – an early example of ABS partnerships in Namibia

Africa



Marula © Suhel al-Janabi

OVERVIEW

An early example of the implementation of ABS principles through multi-stakeholder partnerships for the development of ingredients for cosmetics based on Marula oil

SUBJECT MATTER

Sclerocarya birrea (Marula)

COMMERCIAL USE

Research into the properties of Marula oil for the development of ingredients for cosmetics

PROVIDER COUNTRY

Namibia (Party to the Nagoya Protocol)

DESCRIPTION OF THE CASE

Traditionally, *Sclerocarya birrea* (Marula) kernel oil is used in Namibia as a condiment for food and, less frequently, for skin and hair care.

In the early 1990s, the government of Namibia conducted a survey on economic development options in the north-central regions of the country during which women requested assistance to develop business opportunities to take advantage of their abundant Marula resource.

This gave rise to a series of Marula oil production projects, which piloted a production system for the oil, tested its quality, evaluated its properties, defined the economics of production and pricing, and secured initial customers. By 2001, the possible presence of powerful antioxidants was identified, leading to further collaborative research. Today, Marula oil is an ingredient in a considerable number of beauty and personal care products globally.

Key actors involved and their role

RESOURCE PROVIDERS

- Local women, later organised into the Eudafano Women's Cooperative (EWC) initially provided the marula kernels. EWC was founded in 1999 by 9 pre-existing Marula Women Producers' Associations and later took over oil production.

USERS

- The Body Shop International, through its Community Trade Programme, was the first commercial user for the oil.
- Aldivia, a French company specialized in the sourcing, design, manufacturing and marketing of lipids of plant origin for cosmetics and industry, was a key partner in research and development related to Marula oil.

FACILITATORS

- The Centre for Research, Information, and Action in Africa – Southern Africa Development and Consulting (CRIAA SA-DC), a Namibian NGO, provided technical assistance and support to EWC backed by financial support from the Namibian government and various donors.
- The Southern African Marula Oil Producers Network (SAMOPN) assisted rural producers across the region with sustainable production and extraction of quality oil.
- Trade Associations: in the early process SANProTA (the Southern African Natural Products Trade Association) which later rebranded itself as PhytoTrade Africa to support small natural products enterprises involved in indigenous natural product commercialisation and facilitate market linkages between rural producers and (mainly European) natural products companies.
- The Indigenous Plants Task Team (IPTT) (now defunct) was a government-mandated, multi-stakeholder forum for the indigenous plant products industry in Namibia. It was formed (originally as the Indigenous Fruits Task Team, partially inspired by the Marula oil project) in April 2000, to develop a co-ordinated approach and strategy for the implementation of an economically sustainable promotion of indigenous plant products in Namibia.

The ABS dimension

The Marula oil case is best understood as an early example of ABS. When the commercialisation of Marula oil started, there was no guiding legal framework - even the Bonn Guidelines and the AU Model Law were still being negotiated. But Namibia was one of the original signatories of the CBD, had a strong national biodiversity project (funded by Germany) which included a working group dealing with traditional knowledge, and a separate project (funded by Norway) to develop national ABS legislation (eventually adopted in 2017, with implementing regulations still under development as of June 2020). Compliance with the ABS provisions of the Convention on Biological Diversity was therefore recognised to have important implications for the long-term success of the commercialisation effort.

Marula and associated traditional knowledge (TK) are widespread in Africa. Namibian stakeholders realised early on that fair and equitable treatment of other TK holders and resource owners across the region was needed. With funding from the Gaia Foundation's Genetic Resources Access International Network (GRAIN) project, consultations were held with actual and potential Marula oil stakeholders in southern Africa. As a result, the Southern African Marula Oil Producers Network (SAMOPN) which comprised community-based producer organisations in Namibia, Botswana, Zimbabwe, South Africa and Swaziland was formed to share extraction technology and commercial information, including product specifications and standards. A dialogue on CBD Article 8(j), IPRs and biopiracy was also established within the network. SAMOPN contributed to the conceptualisation of a trade association (SANProTA), which later rebranded itself as PhytoTrade Africa. From 2003 onwards, PhytoTrade *de facto* assumed responsibility for driving the regional commercialisation of Marula oil.

Marula oil commercialisation differed from “standard model” ABS (where a user applies for prior informed consent and undertakes to share benefits on mutually agreed terms) in that it was initiated by and for the benefit of the providers (“Marula women” who were resource owners and holders of TK), who quickly realised that they needed commercial partners (“users”) to access formal export markets.

The first “user” of Marula oil was The Body Shop International (BSI), through its Community Trade Programme. As a specialised retailer of personal care products BSI develops its own consumer products, but it outsources key value chain functions such as ingredient procurement, quality control and stockholding to contracted market intermediaries. After it had launched its first range of products containing Marula oil, BSI actively encouraged EWC (and the other members of SAMOPN) to find additional users and markets for the oil. Doing so required collaboration with an intermediary that had the relevant technical expertise and suitable marketing capacity, in this case the French company Aldivia.

Because Marula oil was a new product with uncertain market prospects the relationship with Aldivia could not be codified into a single definitive agreement. Instead, a step-by-step approach was used, as follows:

- In 2002 CRIAA SA-DC, acting on behalf of primary producers in SAMOPN, concluded a “heads of agreement” framework for a commercial partnership with Aldivia. The basic principles were (i) to ensure co-ownership of intellectual property and valuable information and (ii) to create conditions for successful commercialisation of Marula oil.
- Samples and a series of confidential technical reports on the properties of Marula oil were shared with Aldivia under a material transfer agreement (MTA) between CRIAA SA-DC and Aldivia in December 2002.
- Following evaluation of the samples and technical information CRIAA SA-DC, acting on behalf of the providers, and Aldivia agreed in March 2003 to further co-develop Marula oil.
- An additional MTA and collaboration agreement were concluded between Aldivia and SANProTA in March 2003.
- Iterative collaboration agreements between Aldivia and PhytoTrade Africa were concluded in October 2003, December 2003 and June 2004, leading to a joint development and invention by Aldivia and PhytoTrade Africa in 2005 and 2006.
- In April and June 2006, a dialogue between the IPTT and PhytoTrade Africa resulted in an agreement that PhytoTrade would take over all responsibilities for managing the Marula IP that had been created until then.

In 2006, Aldivia filed a patent application for the process used to create a special type of Marula oil called Maruline. The patent is co-owned by Aldivia and the Southern African Natural Products Trade Association. This particular co-ownership of intellectual property was the first example globally of this specific type of benefit-sharing between traditional knowledge holders and an international company. The main aim of the patent was defensive, to reassure clients who buy Marula oil from Aldivia about their freedom to operate and innovate with the new ingredient.

In the absence of clear ABS regulation, the law on contracts, including intellectual property rights (IPRs), was applied alongside other development objectives to generate benefits for the local producers (including co-ownership through commercial associations). The co-owned patent, which was only filed and granted in France, created transparency and allowed further development of the value chain without the danger that other market players would later file patents restricting use of the oil.



Eudafano Women Cooperative
© Suhel al-Janabi

Between 1999 and 2007 CRIAA SA-DC supported EWC with business planning, cooperative governance procedures and establishing Eudafano Women's Marula Manufacturing (Pty) Ltd, which would own and operate a factory to process Marula and other products. During this period PhytoTrade Africa, CRIAA SA-DC and EWC also collaborated on fair trade and organic certification.

Even without concrete ABS regulation in place, the process has benefitted rural development, generated income for local producers, created products and markets. The process and further efforts by multiple parties resulted in EWC having a Marula factory and business, and several other factories around the region have been established. Bringing processing capacity at the local level empowers local women. Many thousands of women earn important seasonal income. Hundreds, if not thousands, of products around the world now contain Marula oil. The process has had organisational benefits as the EWC as well as PhytoTrade Africa were founded, the impetus was given to form the IPTT, PhytoTrade established a charter for members to sign up to. This charter is based on the 8 principles of the CBD and is closely aligned with the UNCTAD BioTrade Principles and Criteria. PhytoTrade Africa was a founding member of the Union for Ethical Biotrade.

The Marula oil case adheres to the Government's 'Namibia Vision 2030' since 2004 that stipulates that natural capital in Namibia, including forest-based resources, can be exploited with participatory and sustainable approaches to enable well-being in an economic and ecologic sense.

THE ABS LEGAL FRAMEWORK IN NAMIBIA

No ABS measures were in place at the time of the agreements

2014: Namibia ratified and became a Party to the Nagoya Protocol

2017: The Access to Biological and Genetic Resources and Associated Traditional Knowledge Act 2 of 2017 was endorsed. This legislation sets out arrangements and procedures including processes for accessing biological or genetic resources and associated traditional knowledge, their products and derivatives. The Act specifies that actions regulated by the law are liable to the prior informed consent of the rights holders and mutually agreed terms. Further regulation and guidelines are under discussion.

Lessons learned

ABS MEASURES

- In absence of clear ABS regulations (at the time), the law on contracts, including intellectual property rights (IPRs), applied alongside other development objectives can enable the generation of benefits for local producers (including co-ownership through commercial associations).

ELEMENTS THAT SUPPORT THE PROCESS

- Formalisation and good governance allow cooperatives to take over the function of traders and middlemen and as a result, members are paid a fair price for their produce. Associations and cooperatives allow for easy outreach in terms of capacity-building and increased competitiveness.
- Technical support and capacity-building for rural producers by local development organisations, trade associations, as well as multi-stakeholder and government task teams have been a key factor in supporting communities not only in investigating the economic viability of their products but also in negotiating complex commercial agreements. The partnership between EWC, CRIAA SA-DC and PhytoTrade to develop technology, support innovation, and create market linkages with the buyers of Marula oil has facilitated the creation of economic and social benefits for local women.
- Commitment to fairness and equity, which translates into transparency and consultation, allows ABS partnerships to evolve. ABS agreements can develop step by step, as processes cannot be foreseen, here the commitment strongly facilitates consultation on role and responsibilities and next steps.
- The Marula case was initiated by the resource providers. By asserting proactive ownership of their biological resources and traditional knowledge, local producers generated benefits for socioeconomic development.
- The local producers recognised the need for partnerships with well-resourced commercial operators and adjusted the ABS process accordingly. They benefitted from the involvement of multiple actors collaborating over many years and through a series of individual but linked commercial agreements. In this case, a single benefit-sharing agreement between two parties (as is often the focus of ABS regulations) could not have reached the benefits achieved.

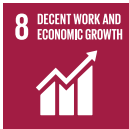
Contribution to the Sustainable Development Goals (SDGs)



SDG 1, target 5.5: The process has benefitted rural development and generated income for local producers. From 2012 to 2015 alone, income of EWC members from raw materials has quadrupled.



SDG 5, target 5.5: The collaboration between women in the associations with buyers and intermediaries contributed to the development of strong communication and negotiating on skills. The commercial approach adopted by the local women was further strengthened by participation in the regional trade association and interactions with international business partners.



SDG 8, target 8.2: Experience from Marula commercialisation has been replicated and two additional oils (Kalahari melon seed and Ximenia) have been commercialised.



SDG 9, targets 9.5, 9.b: The process has contributed to transfer of technology and processing capacity at local level.



SDG 15, target 15.1: Semi-formal and anecdotal evidence suggests that women involved in the commercialisation of Marula products through their cooperative are more likely to protect their Marula trees, and indeed to grow more trees.



SDG 17, target 17.5: The process has had organisational benefits as the EWC as well as PhytoTrade Africa were founded, and regional cooperation among local producers was initiated.

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Identifying new antibiotics from Kenyan fungal compounds

Africa



The project partners at work in Kenya
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OVERVIEW

Academic institutions collaborate to identify new antibiotic activities in mushrooms and other fungi associated to Kenyan plants, creating and sharing knowledge and expertise in an ABS framework.

SUBJECT MATTER

Plant-associated fungi, macrofungi, plant material hosting fungi, secondary metabolites, QS-inhibitory molecules

SCIENTIFIC USE

Basic research on fungal diversity, on antimicrobial secondary metabolites produced by fungi and on QS-inhibitory molecules potentially suitable for antibiotic production. Isolation of endophytic fungi from plant material and collection of macrofungi (macromycetes).

PROVIDER COUNTRY

Kenya (Party to the Nagoya Protocol)

DESCRIPTION OF THE CASE

The project, called “ASAFEM – The Search for New Antibiotics from Tropical Fungi”, sought to identify antibiotics and anti-quorum sensing compounds. In particular, the project focused on secondary metabolites from mushrooms and other fungi associated with Kenyan medicinal plants from the regions of Kakamega and Mt Elgon, to investigate their potential for the production of new antibiotics in human medicine.

Secondary metabolites are organic compounds not essential for the growth, development and reproduction of one organism, but which can have a protection function against other organisms (i.e. antimicrobial activity). Fungal secondary metabolites might be useful as new antibiotics in human medicine. Multi-drug resistant (re-)emerging bacterial pathogens are posing new global health challenges as the development of antimicrobial compounds has stagnated for years. Due to these challenges, it is important to return to natural products drug discovery. Fungal biodiversity has the potential to provide a readily renewable, reproducible source of novel bioactive compounds. It is recognized that for some microorganisms, their competition and survival strategies are not only related to the production of bactericidal and fungicidal compounds which inhibit microbial growth, but also by disrupting the competitor communication systems (quorum sensing, QS) which are essential for the survival of the bacteria. Therefore, research on the presence of QS is an important focus of this project.

Fungal strains from plants were isolated directly in Kenya, so that plant material did not have to be exported to Germany. Furthermore, the project studied the phylogeny of organisms through molecular analyses and collected (chemo-)taxonomic information. Several new taxa have been described.

The project trained young Kenyan scientists in the field of biodiversity and drug research and promoted the adequate and effective transfer of appropriate knowledge and technology in accordance with ABS objectives. The project fostered closer collaboration and funding of scientific research among research institutions of the European Union and from Africa for innovation and sustainable development in science and technology (see below).

ASAFEM was supported by the ERAfrica¹ programme through the Federal Ministry of Education and Research (BMBF) in the period 2014-2017. Funding was later extended to 2018. The cooperation continues presently thanks to ongoing financial support by the Humboldt Foundation and the German Academic Exchange Service (DAAD).

Key actors involved and their role

RESOURCE PROVIDER

- The Kenya Wildlife Service (KWS) as manager of the Kakamega Nature Reserve and Mt Elgon.

COMPETENT AUTHORITY

- The National Environment Management Authority (NEMA) is the ABS competent national authority in Kenya.

NATIONAL COLLABORATOR

- Egerton University, Kenya: The collaborators of the Egerton University were from the Departments of Chemistry and Biological Sciences, both of which are in the Faculty of Science. The collaborator from the Biological Sciences was mainly involved in the isolation of fungal endophytes while the one from the Department of Chemistry was involved in the structure elucidation of the isolated secondary metabolites and was the coordinator of the project.

USERS

- Helmholtz Centre for Infection Research (HZI), Braunschweig, Germany: The research activities of HZI are focused on the exploration of biodiversity worldwide, particularly of bacteria and fungi, for detecting novel compounds with biological activity and with the potential to be used to develop in particular antibiotic drugs. HZI follows the ABS principles of the CBD within its projects. In the context of its ABS activities, capacity-building for students from different countries worldwide is promoted. Within the ASAFEM project, HZI shared its expertise and knowledge with scientists and students from Kenya.
- Technical University of Berlin (TUB), Berlin, Germany: The Institute of Chemistry of the TUB works at the interface of chemistry and biology. It was involved in the isolation of novel bioactive secondary metabolites and in the elucidation of their structure, mode of action and biosynthesis.
- Mycothèque of the Catholic University of Louvain (MUCL), Université catholique de Louvain, Belgium: MUCL is a fungal collection hosted by the Laboratory of Mycology, Earth and Life Institute. MUCL is one of the first institutions in Europe to distribute the microbiological material under a standard set of general conditions of distribution (MTA and MDA²). Fungal collections of the ASAFEM project are deposited at MUCL as Kenya has no collection facilities for fungi so far. Collections are publicly available, under the conditions set up in the material transfer agreement (MTA)/mutually agreed terms (MAT) signed between MUCL and the Kenyan Authorities.

¹ ERAfrica was a European Union (EU) project aimed at promoting a unified European approach to collaborating with Africa in the field of science and technology research for innovation and sustainable development. ERAfrica was part of the 7th Framework Programme.

² MDA: Material Deposit Agreement.

The ABS dimension

The project consists mainly in basic research, but R&D and future commercial exploitation of research results are possible, if suitable compounds are discovered. The benefit-sharing agreement signed between partners and authorities in accordance with Kenya's ABS requirements addresses commercial use. The commercial use of any discovery under the agreement has to be negotiated with KWS and NEMA in the provider country.

Egerton University first applied for prior informed consent (PIC) prior to initiating the negotiation of a material transfer agreement (MTA) and mutually agreed terms (MAT) in 2013. A representative of the community was involved in preparing the PIC. MAT and MTA were then signed by all actors involved in the project, for regulating the sharing of monetary and non-monetary benefits. PIC, MTA and MAT documents were negotiated with Kenya Wildlife Service (KWS).

All other mandatory permits for research, export and access to protected areas were managed by the partner university in Kenya. A grant agreement was also signed by parties. Collection permits were available for field work in Kakamega and Mt Elgon. The forest guides involved in field work were members of the community. European partners faced no problems with ABS processes as the local university and authorities in Kenya supported the project from the start.

Monetary benefits included the following:

- Research and infrastructure funds available for Kenya to build capacity and research infrastructure. The government of Kenya allocated 100,000 Euros but only disbursed about two thirds of the money. The BMBF (ERAfrica) contributed 30,000 Euros via HZI towards purchase of research materials in Kenya.
- Grants internships at TUB and HZI were available for master students (MSc) and principal investigators (PIs) from Kenya (supported by ERAfrica and DAAD).
- Five PhD-studies in Germany were supported by DAAD.



*The project partners in Kenya
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Non-monetary benefit-sharing included the following activities:

- Research cooperation, in particular support in the building of infrastructures and exchange of expertise and resources related to biodiversity; numerous joint publications, also arising from research carried out by students under the DAAD-grants.
- Knowledge sharing on fungal diversity and on bioactive compounds of fungi with local people.
- Capacity-building: within the ERAFRICA funding phase, three months visits (internships) to Germany for MSc students from Kenya were paid to learn about research methods. The MSc students involved later obtained a DAAD funding for their PhD project. Their previous internships at TUB/HZI increased their chances to get the DAAD grant considerably. In total, five Kenyan students have so far been able to carry out PhD studies in Germany as a result of the project. The well-established long-term cooperation with the German institutions has also continued after graduation. The graduation and work experience in Germany was an asset for Kenyan students in finding a job in their country. Trainings took place also during field work and workshops were organized.

THE ABS LEGAL FRAMEWORK IN KENYA

The following ABS measures were adopted prior to the Nagoya Protocol:

- 1999:** The Environment Management and Coordination Act (ECMA, Sect 53), no. 8 of 1999, entered into force.
- 2006:** The Environmental Management and Co-ordination Regulations, Legal Notice no. 160.
- 2010:** The Constitution, art. 69 and 71.
- 2013:** The Wildlife Management and Conservation Act, art. 22.
- 2014:** Kenya ratified the Nagoya Protocol.
- 2015:** A review of national ABS measures was initiated in 2015.

Lessons learned

NATIONAL ABS FRAMEWORK

- When the project started in 2013, ABS tools were not fully developed in Kenya. The experience of German scientists with ABS processes in other countries was important to support the development of ABS-related templates and forms. The support of ABS-knowledgeable users can contribute to ABS implementation in the provider country.

BENEFIT-SHARING

- Local scientists and communities benefit from the know-how and results shared in research projects.
- Research funds for local scientists are important for building research infrastructure and capacities.

SUPPORT THROUGH CAPACITY-BUILDING PROJECTS

- The project is a good example of how capacity-building activities are essential to successful ABS processes.

RELATIONSHIP BETWEEN USERS AND PROVIDERS

- Establishing long-term, trustful and successful cooperation with local scientists and authorities, including the building of capacities and of research and education infrastructure, supports ABS implementation and access to genetic resources.
- Local partners play an important role as facilitators in ABS processes.

ELEMENTS THAT SUPPORT TO THE PROCESS

- Commitment and engagement of users with ABS inform and support ABS processes involving local partners. This contributed to the successful outcome of the project.

FURTHER LESSONS

- ABS processes are time-consuming and delay meaningful research work. Funding agencies should allow for projects to include time for this process, with special financing for this purpose.
- Appropriate benefit-sharing can only be supported with adequate financial resources. The funding allocated to the project by ERAFRICA was not substantial. Thanks to additional funding for the project (DAAD, Humboldt Foundation), it was possible to establish a sustainable collaboration, which now involves a second generation of PhD students.

Contribution to the Sustainable Development Goals (SDGs)



SDG 3, targets 3.8, 3.b: The project identified bioactive fungal secondary compounds to tackle antimicrobial resistance, which supports the improvement of the health of people worldwide.



SDG 4, targets 4.3, 4.4, 4.5, 4.7, 4.b: ABS measures enhanced quality education, as expertise in the field of fungal biodiversity and drug research in Kenya was built by the project. Scholarships were available for students from Kenya.



SDG 5, target 5.5: Gender equality has been supported by non-monetary benefit-sharing, in particular by capacity-building activities. Many women from Kenya carried out their Master/PhD studies in Germany and graduated with top grades.



SDG 9, targets 9.5, 9.b: Through monetary and non-monetary benefits, the project supported scientific research and infrastructure development in Kenya. The project mobilised EU financial resources for this purpose. The number of researchers in Kenya increased. Furthermore, HZI is studying with other partners possible applications in new fields, such as the use of fungi as biocontrol agents in agriculture.



SDG 15, targets 15.6, 15.a: Knowledge on biodiversity and its importance for identifying bioactive substances has been enhanced.



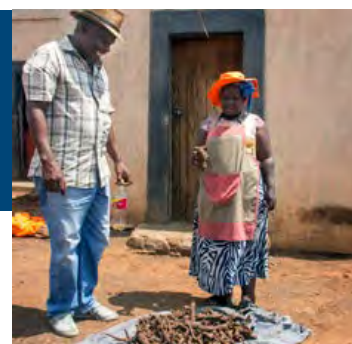
SDG 17, targets 17.1, 17.6, 17.7, 17.9: The project and its ABS activities enhanced cooperation, access to science, technology, innovation and knowledge sharing among countries of the European Union (Germany, Belgium) and Kenya. Sustainable development was promoted, and financial resources mobilised.

Relevant contacts/sources of information:

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- Project description at the BCCM-Website: <https://bccm.belspo.be/newsletter/03/search-new-antibiotics-tropical-fungi>
- Website of the Egerton University: <http://www.egerton.ac.ke/>
- Website of HZI: <https://www.helmholtz-hzi.de/en/research/research-topics/anti-infectives/microbial-drugs/our-research>
- Website of the Institute of Chemistry (TU Berlin, Germany): <http://www.biochemie.tu-berlin.de>
- Access and Benefit-Sharing – Information portal for Kenya: <http://meas.nema.go.ke/abs/>
- The ABS Capacity Development Initiative: <http://www.abs-initiative.info/partner-countries/kenya/>
- Study - ABS Initiative, Valorization Potential Study: Kenya - Version 2019-01-15: http://www.abs-initiative.info/fileadmin//media/Knowledge_Center/Publications/Patent_Studies/Neu/Kenya_-_Valorization_Potential_Study.pdf
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The development of a treatment for bronchitis based on a plant from South Africa

Africa



Pelargonium yield © Ulrich Feiter

OVERVIEW	A long-term ABS partnership with indigenous communities for a pharmaceutical product to treat bronchitis
SUBJECT MATTER	<i>Pelargonium sidoides</i> , a plant in the <i>Geraniaceae</i> family
COMMERCIAL USE	Commercial use of <i>Pelargonium sidoides</i> for the development of a medical product for the treatment of bronchitis
PROVIDER COUNTRY	South Africa (Party to the Nagoya Protocol)

DESCRIPTION OF THE CASE *Pelargonium sidoides* is part of the *Geraniaceae* family and is endemic to Lesotho and different regions of South Africa. The recorded medicinal uses most often are related to urinary and digestive tract diseases such as diarrhoea, dysentery, colic and liver complaints. Mucilage from the leaves has been used as a wound dressing. Furthermore, *Pelargonium* sp. was used to treat sore throats and congestion. Since the beginning of the 20th century, *Pelargonium sidoides* has been used to treat respiratory tract infections in Europe.

In 1974, a doctoral study commissioned by the German pharmaceutical company ISO-Arzneimittel analysed *Pelargonium* plant ingredients. The findings stimulated further pharmacological research into the active constituents and a series of clinical trials to confirm the efficacy of *Pelargonium* species for treating bronchial conditions. In 1987, the Schwabe Group (hereafter ‘Schwabe’) took over ISO-Arzneimittel. Based on *P. sidoides*, Schwabe developed a product for the symptomatic treatment of bronchitis called Umckaloabo® – a long time before South Africa became Party to the CBD.

In 2008, when the Bioprospecting, Access and Benefit-sharing legislation was adopted, Schwabe with its local partner Parceval applied for an integrated bioprospecting and export permit and prior concluded benefit-sharing agreements in South Africa with the King Sandile Development Trust as well as a number of other traditional councils in whose areas *Pelargonium* is harvested. The King Sandile Development Trust entered into a Benefit-Sharing Agreement for the associated traditional knowledge, in addition to the individual BSA entered into with various traditional councils for harvesting of pelargonium roots.

Key actors involved and their role

RESOURCE PROVIDERS	King Sandile Development Trust and Imingcangathelo Community Development Trust as well as several other traditional councils as providers of <i>Pelargonium</i> .
COMPETENT AUTHORIT	National Department of Environment, Forestry and Fisheries

USERS

- Schwabe Group, a German-based family-owned group of companies specialised in the research, development and production of herbal medicinal products. Some of Schwabe's cooperation projects with communities go back well before the implementation of National Environmental Management: Biodiversity Act (NEMBA).
- Parceval (PTY) LTD, South Africa, part of the pharmaceutical manufacturing industry, is focusing on cultivation and sourcing of botanical raw materials, establishing supply chains. In the case of Pelargonium, Parceval as an intermediary is processing resources and conducting quality control.

The ABS dimension

The ABS legal framework sets out a rigorous approval process for actors wanting to get involved in bioprospecting activities related to indigenous biological resources and traditional knowledge. Also, harvesting permits are issued by the regional offices of the Nature Conservation authorities.

The regulations giving effect to NEMBA were published in April 2008 and provided the industry with a 6 months' time frame in which to apply for a bioprospecting permit. The application was handed in during September 2008 and comprised of:

- A detailed description of all activities taking place at the time of application as well as projects which were planned at that time
- Current harvesting permits – these are in the name of the traditional council and/or the harvest coordinator
- Benefit-sharing agreements (BSAs) with two traditional councils
- Material transfer agreements (MTAs) with the same traditional councils

Harvesting permits need to be renewed regularly as they are valid for specific areas and time frames only. Subsequently, additional BSAs and MTAs were concluded in different areas with several more traditional councils and submitted to the National Department of Environment, Forestry and Fisheries, DEFF.

Wild harvesting is mostly conducted in the Eastern Cape in the traditional Rharhabe Kingdom – which is organised under the late Queen Sandile and 42 individual chiefs. The King Sandile Development Trust entered into a Benefit-Sharing Agreement for the associated traditional knowledge. Over the years, a specific model of benefit-sharing has evolved in order to guarantee the sustainable use of the natural resource. Therefore, rotational and supervised wild harvesting is practiced, involving large areas as well as repeated harvesting cycles of up to 10 years. Due to this situation, a more flexible approach to benefit-sharing has been established between the partners.

Benefit-sharing

Monetary benefits are negotiated with the traditional council based on the quantities of raw material purchased in their areas – an agreed additional percentage of the price per kg paid to the harvesters is recorded in the signed BSA. The BSA is finally signed and thus endorsed by the Minister of Forestry, Fisheries and the Environment before it becomes a legally binding document. In cooperation with the Chiefs and their representatives, projects predominantly in the fostering of education are identified and then executed together with relevant community members. Even though these projects are not included in the BSAs due to the rotational nature of the harvesting activities, the projects would not exist without the cooperation between user and providers. Since the implementation of NEMBA in 2008, several million Rands have been invested in a wide range of projects benefiting the harvesting communities.

Two organisations were specifically created for the implementation of educational projects: the Umckaloabo Foundation of Schwabe and the Samara Foundation initiated by Parceval implement educational projects hand in hand with the supported communities.

-
- Early Childhood Development Centres (ECDC). Typically, ECDCs in rural areas have very poorly developed infrastructure and are underfunded. Interventions include renovations, infrastructure upgrades and equipment, furniture, teaching materials, establishing a vegetable garden to be able to feed the children a daily meal, etc.
 - Over and above, teacher training workshops are conducted regularly to empower teachers to improve and expand their teaching techniques.
 - Currently, the infrastructure of the Ekuphumleni High School in Whittlesea in the Eastern Cape is developed with more than € 100.000 for new classrooms, upgrades in the science and media centre and a new sports field – permanently benefitting more than 1.400 pupils.

One of the local coordinators in the Early Childhood Development Centres is a retired nurse. Regular health checks of the children in the Educational Development Centres (ECDCs) in her area are being performed and the parents are informed of potential issues that need to be taken up with the local health professionals. Part of the intervention in the ECDCs is the erection of toilets and a safe drinking water system.

Over the years various projects raising awareness around biodiversity were implemented:

- A community cultivation project – both for *Pelargonium* as well as to support food security.
- A tree planting project at a rural primary school where pupils were taught about the value of planting fruit trees as part of their biology / agriculture modules in Grade 5 and 6 – several hundred fruit trees were donated and planted out at the children’s homes.
- Planting of fruit and ornamental trees at a rural high school.

Beyond the specific benefit-sharing agreements, the cooperation between Schwabe, Parceval and the local *Pelargonium* industry triggered processes and research that advanced the private sector as well as the eco-system.

- Two large scale resource assessments of *Pelargonium sidoides* growing in the wild have been funded and executed in 2009 and 2018 by an independent environmental consultant recommended and endorsed by the South African National Biodiversity Institute (SANBI). The resulting reports have been handed over to the SANBI. Through these two studies, *Pelargonium* has become one of the best understood species in the country.
- Post-harvest recovery studies are being conducted regularly since 2003 to monitor and understand the development of *Pelargonium* plant ecosystems after a harvesting event.
- Co-funding of a non-detriment study of *Pelargonium* conducted by WWF in South Africa and Lesotho.

In 2007, Schwabe and its local partner Parceval inaugurated the *Pelargonium* Working Group with members from industry, research institutions, local government and conservation agencies. By now this is a statutory working group under DEFF and has compiled and is overseeing the implementation of the gazetted Biodiversity Management Plan for *Pelargonium sidoides*.

THE ABS LEGAL FRAMEWORK IN SOUTH AFRICA

- 1995:** South Africa became a Party to the Convention of Biological Diversity.
- 2004:** National Environmental Management: Biodiversity Act (NEMBA), Chapter 6 of NEMBA deals explicitly with aspects of access and benefit-sharing. NEMBA is implemented by the Department of Environment, Forestry and Fisheries (DEFF)
- 2008:** Regulations on Bioprospecting, Access and Benefit Sharing (BABS)– introduced and implemented before the adoption of the Nagoya Protocol (amended in 2015)
- 2013:** South Africa ratified the Nagoya Protocol.

Lessons learned

TRANSPARENCY AT LOCAL LEVEL

- Community Protocols are important elements to ensure that the whole community is fully aware of the ramifications of the proposed project and that they have authorised a signatory to sign agreements on their behalf. Biocultural community protocols are a recent concept in South Africa and can benefit ABS processes when applied on a sector level.

BENEFIT-SHARING

- Benefit-sharing models should be adapted to particular circumstances. In this case, some monetary contributions to the traditional councils and substantial direct involvement and investment in a range of projects at community level have evolved over time. As a result, a large portion of the community can benefit.

TRADITIONAL KNOWLEDGE

- Possible traditional knowledge holding communities may be unaware of the existence of other knowledge holders on the same resource. The absence of information and limited awareness of indigenous peoples and local communities in this regard can hamper ABS projects as demonstrated by early controversies around this case.

ENGAGING IN LONG-TERM RELATIONSHIP

- Engagement with communities is a long-term investment. Providers and users cannot expect important developments in a short-term project as no tangible outcomes can be achieved in a timeframe of one or two years. Results will only materialise in the medium to long term.

EXPECTATION MANAGEMENT

- High hopes and expectations must be managed, and benefits and funds, however much, are never enough to cover all the needs.

ABS CAN HELP SHIFT THE MIND-SET

- Implementing ABS agreements is complex for private sector and local communities. In this case, an important shift of mind-set was observed on the user side from “we have to do this” to “we want to do this”. Implementing ABS projects requires passion to overcome challenges related to logistical problems, poor infrastructure, the lack of capacity and complex ABS procedures.

COOPERATION BUILDS RELATIONSHIPS

- Deep relationship with the rural communities and traditional leadership structures can grow in the provider country with the engagement of users. Parceval, the local user has been experiencing increasing interest and continuous engagement of its management and staff with respect to the harvester communities and the ABS projects developed over the years.

Contribution to the Sustainable Development Goals (SDGs)



SDG 2, target 2.1: Starting and maintaining vegetable gardens contributes to daily feeding in the ECDCs. Infrastructure improvements include kitchens and cooking equipment to prepare a more balanced diet.



SDG 3, target 3.3: Due to various medical uses of Pelargonium, the case shows how ABS can contribute to improve health in a local and global setting.



SDG 4, target 4.1: Over the past ten years, the quality of education of approximately 250 children per annum has been positively impacted; the projects triggered by ABS reached out to around 1.000 children, from almost as many households; and, approximately 20 teachers have been supported with training and teaching aids. Benefit-sharing activities include support to the Early Childhood Development Centre such as the training of teachers and the development of infrastructure which contribute to facilitate access to and quality of education.



SDG 6, target 6.2: Children benefit from toilets and the establishment of a safe drinking-water system in the Early Childhood Centres.



SDG 8, target 8.5: Through the BSA Pelargonium harvesting substantially adds to household income during the harvesting season. Since harvesters tend to be predominantly women, additional funds are usually well invested into the wellbeing of the family.



SDG 15, target 15.1: Life on Land: Over the years various projects raising awareness around biodiversity were implemented including a community cultivation project, a tree planting project at a rural primary school, and the planting of fruit and ornamental trees at a rural high school.



SDG 17, target 17.17: The collaboration resulting from ABS activities under this project has enhanced cooperation across the sectors leading to collaborative studies, and to the development of monitoring and management plans.

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Pelargonium sidoides
© Ulrich Feiter

The development of a fragrance based on the scent of the Clanwilliam cedar found in South Africa *Africa*



The Widdringtonia Eau de Parfum
© Wikimedia commons

OVERVIEW

The development of a fragrance based on a multi-stakeholder ABS partnership involving the sharing of monetary and non-monetary benefits

SUBJECT MATTER

Widdringtonia Widdringtonia cedarbergensis (Clanwilliam cedar)

COMMERCIAL USE

Development of a fragrance for commercial use in a perfume.

PROVIDER COUNTRY

South Africa (Party to the Nagoya Protocol)

DESCRIPTION OF THE CASE

The *Widdringtonia cedarbergensis*, or Clanwilliam cedar is found in the Cederberg mountains, north of Cape Town, in South Africa. It is endemic to the region and on the verge of extinction due to over harvesting of its timber. CapeNature, a public institution, is responsible for managing biodiversity in the Cederberg mountains. It works closely with the Heuningvlei community, who lives in the Cederberg mountains, to conserve the Clanwilliam cedar.

Givaudan is a global manufacturer of flavors and fragrances. As part of its program on “The Scent of the Vanishing Flora”, which sought to capture the scent of rare and endangered plants to raise awareness of their importance and provide inspiration to its perfumers, it visited the Cederberg mountains in South Africa. Thanks to headspace technology, which captures volatile molecules, Givaudan was able to collect scent samples of leaves and dead wood from the Clanwilliam cedar without removing any physical samples. Givaudan was then able to recreate the scent of *Widdringtonia* – that is, it developed a perfume concentrate using other ingredients within its perfumery palette. The perfume concentrate is inspired by, but does not contain, Clanwilliam cedar.

The Body Shop used the perfume concentrate to develop the Widdringtonia Eau de Parfum, part of its Elixirs of Nature product line. For The Body Shop, this perfume was an opportunity to talk about and support the conservation of this endangered tree and the communities that contribute to its preservation. Product information and marketing highlight the Clanwilliam cedar, the Cederberg mountains and their importance to biodiversity. Additionally, a benefit-sharing agreement was signed under South African rules on access and benefit-sharing (ABS), involving CapeNature as the provider and The Body Shop and Givaudan jointly as users. The negotiation process and content of the benefit-sharing agreement is further described below.

Key actors involved and their role

RESOURCE PROVIDERS

- CapeNature: CapeNature is the public institution responsible for managing biodiversity in the Western Cape, including the Cederberg mountains. It works with local communities to support conservation of the Clanwilliam cedar. It facilitated the discussion between the industry representatives and the community. As the managing entity for the Cederberg Wilderness Area, where the scent molecules were obtained, Cape Nature was considered the provider of the indigenous biological resource.

- Heuningvlei community: The Heuningvlei community is located in Cederberg mountains and composed of approximately twenty-five families. It actively contributes to the conservation of the Clanwilliam cedar through various efforts including tree planting activities organized by the local school on an annual basis. Given its role as a steward of the Clanwilliam cedar, the community was involved in discussing and establishing the prior informed consent and mutually agreed terms for benefit-sharing.

COMPETENT AUTHORITY

- South African authorities: The Department of Environment, Forestry and Fisheries (DEFF) is the competent national authority responsible for access and benefit-sharing in South Africa.

USERS

- The Body Shop: The Body Shop is a retail perfume and cosmetics company, based in the United Kingdom. It is committed to sustainable sourcing, the implementation of the Nagoya Protocol and its ABS principles.
- Givaudan: Givaudan is a global manufacturer of flavours and fragrances based in Switzerland. Its flavors and fragrances are used in food products, household products, as well as personal care products and cosmetics.

FACILITATOR

- Union for Ethical BioTrade (UEBT): UEBT is a non-profit organization based in Amsterdam, promoting the sourcing with respect of ingredients from nature. UEBT provided support to The Body Shop and Givaudan in navigating ABS requirements and facilitated discussions with providers and competent authorities.

The ABS dimension

In South Africa, access and benefit-sharing requirements (see box below) apply to indigenous plants, animals or other organisms, as well as their derivatives and genetic information and cover both activities related to “bioprospecting” and “biotrade”.

In this particular case, the relevance of ABS requirements was not straightforward, as headspace technology does not take physical samples and only captures volatile molecules. After discussions with authorities and given their commitment to ABS principles, Givaudan and The Body Shop decided to apply jointly for a permit for their activities.

In South Africa, a permit is granted by the competent national authority once prior informed consent is obtained and mutually agreed terms, including the sharing of benefits, have been established with the provider of the resource. Hence, to obtain a permit, The Body Shop reached out to CapeNature, the public institution with statutory responsibility for biodiversity conservation in the Western Cape considered as the provider. In addition, given a bioprospecting permit may only be issued to national persons or entities, or foreign persons or entities applying jointly with them, The Body Shop applied for a permit jointly with Givaudan South Africa.

In October 2018, a benefit-sharing agreement was signed between CapeNature, as the provider, and the Body Shop International and Givaudan South Africa as the users. CapeNature also insisted on involving the Heuningvlei community in this process, as an important steward of the Clanwilliam cedar, so that the community could benefit from the mutually agreed terms. The competent authorities accompanied and provided valuable guidance in the process. In May 2019, Givaudan and The Body Shop obtained an integrated biotrade and bioprospecting permit for *Widdringtonia cedarbergensis*.

The sharing of benefits was defined in the mutually agreed terms. Both monetary and non-monetary benefits were considered. Monetary benefits were defined taking into account the turnover of The Body Shop perfume as the final product. In accordance with national ABS requirements, these monetary benefits are paid into the Bioprospecting Trust Fund, which then transfers them to CapeNature for the projects agreed upon in the mutually agreed terms between provider and users. These projects are aimed at preserving the Clanwilliam cedar and supporting livelihoods in the Heuningvlei community through:

- The establishment of a nursery in the Heuningvlei community to facilitate the germination of seeds and replanting of young clanwilliam cedar trees
- The improvement of facilities for providing lodging and other amenities for tourists in the context of eco-tourism activities which provide a key income to the community.

In terms of non-monetary benefits, Givaudan South Africa is to share best practices related to the conservation and sustainable use of biodiversity in the development and sourcing of natural ingredients for fragrances and flavors. Both companies also endeavor to acknowledge the geographical origin of the Clanwilliam cedar and the cultural heritage of the community in relevant product marketing and corporate communications.

THE ABS LEGAL FRAMEWORK IN SOUTH AFRICA

- 2004:** National Environmental Management: Biodiversity Act (NEMBA)
- 2008:** Regulations on Bioprospecting, Access and Benefit-sharing (BABS regulations) amended by the BABS Amendment Regulations
- 2013:** South Africa ratified the Nagoya Protocol on 10th January 2013

Lessons learned

NATIONAL ABS MEASURES

- Provider country authorities play an important role in providing guidance with respect to the scope of application of ABS requirements. In this case, given the technology involved which does not require physical access to samples of the material, the relevance of ABS requirements was not clear to the user companies at the outset.
- The support of competent national authority in navigating the ABS procedures at national level is key
- Considering the need for companies to potentially request ABS permits for multiple ingredients involved in the development of a fragrance or cosmetic product, the time frame and costs involved in navigating ABS rules is difficult to reconcile with commercial pressures.

BENEFIT-SHARING

- The absence of pre-established parameters for benefit-sharing provides flexibility, but it also can contribute to lengthy and complex negotiations when a number of actors are involved.
- Benefit-sharing can contribute to conservation, sustainable use and to the livelihoods of communities by supporting specific ground-level projects.

ELEMENTS THAT SUPPORT THE PROCESS

- Facilitators can play an important role in supporting the process, in particular when many actors are involved: in this case CapeNature played a key role in the involvement of the community. The involvement of UEFT, with the support of the ABS Capacity Development Initiative, also contributed to facilitating the process and to establishing a good partnership amongst the different actors.
- Commitment to ABS principles and openness of users to learning by doing

Contribution to the Sustainable Development Goals (SDGs)



SDG 1, target 1.4 and SDG 8, target 8.3: This case illustrates the contribution of ABS to economic and social development, in particular to the livelihood of the community by supporting ecotourism activities.



SDG 12, target 12.6: This ABS partnership illustrates how transnational companies can contribute to sustainable practices.



SDG 15, targets 15.1, 15.2, 15.6: The benefit-sharing agreement established in accordance with the South African ABS framework enabled fair and equitable sharing of benefits. The benefits shared contribute to the conservation and sustainable use of the Clanwilliam cedar.



SDG 17, target 17.16: A multi-stakeholder ABS partnership, including monetary and non-monetary benefits can contribute to sustainable development through the sharing of knowledge, expertise, technology and financial resources.

Relevant contacts/sources of information:

- A Benefit-sharing Agreement for the Clanwilliam cedar, UEBT resource material
- ABS documents: Integrated biotrade and bioprospecting permit and benefit-sharing agreement
- Communications with The Body Shop



*Landscape between Citrusdal and Clanwilliam
© blouberg_adventurer*

Researching biodiversity to preserve traditional diets and wild plants in the Middle East Asia



Close-up image of the wild edible plant *Gundelia tournefortii*
© RBG Kew

OVERVIEW

Research and conservation of wild plants used by local communities in their diet, based on ABS principles and benefit-sharing arrangements.

SUBJECT MATTER

Plant specimens and seeds, phytochemicals, genetic material and associated traditional knowledge

SCIENTIFIC USE

Basic research activities, including:

- Collection of wild plant species used in the traditional diets of local people and associated ethnobotanical knowledge (through interviews)
- Conservation of seeds in seed banks and preservation of associated traditional knowledge
- Research on seed germination, phytochemistry and genetic diversity.

PROVIDER COUNTRIES

Jordan and Lebanon (Parties to the Nagoya Protocol)

DESCRIPTION OF THE CASE

The main objective of the project, called “Restoring the traditional Mediterranean diet through the conservation of wild edible plants”, is to promote the sustainable use of the traditional Eastern Mediterranean diet, recognized in 2010 by UNESCO as an intangible cultural heritage of humanity, through the preservation of traditional knowledge and science-based conservation of wild edible plants in Jordan and Lebanon.

It aims to conserve and research wild plants used by local communities in their diet, as well as to identify opportunities for these plants to be cultivated, rather than collected from the wild. Gathered information is shared with local partners and communities. It supports sustainable use and commercialization of these plants by local people, the preservation of traditional knowledge, and food security in this region.

In Jordan and Lebanon, wild edible species are still gathered and used as part of traditional dishes. They increase dietary diversity and nutrition in these countries. Some of these edible species are however endangered because of over-collection and habitat destruction. Knowledge about their cultivation is limited and the relevance of these plants to health and nutrition is in most cases unknown.

This project has been developed jointly under the Millennium Seed Bank Partnership (MSBP or MSB), of which Jordan and Lebanon are part. Its main components are (see also below):

- Collecting ethnobotanical knowledge on Eastern Mediterranean wild edible plant species and selecting those most important for local communities (literature review and database; in a next project phase also interviews carried out by local collaborators);

- Field surveys and collection of material for selected wild edible species;
- Research on seed germination, phytochemistry and genetic diversity for selected wild edible species with a focus on *Gundelia tournefortii*;
- Promotion of research findings and products of selected wild edible species.

A pilot project has been funded for 1 year in the framework of the Useful Plants Project. Preliminary work has been carried out during 2019 - 2020 focusing on *G. tournefortii*, which is known as 'Akkoub' locally. The implementation of this project has involved collecting and accessing plant material of wild edible species in accordance with the ABS requirements of the countries. A range of research techniques are being used to understand more about the seed biology and nutritional quality of these plants. In addition, a database collecting information about wild edible plants in the region, including their medicinal use, has been produced. This helps inform decisions around which species are of most interest and their location for further collections of plants important to the Mediterranean diet as well as identifying gaps in information.

In the near future (pending further funding), the study will involve seed collection and conservation and plant propagation activities, as well as support the development of marketable produce and products as a consequence of their promotion. In Lebanon, this project links to existing activities carried out by the Shouf Biosphere Reserve related to the sustainable harvesting of edible wild plants, in addition to their production with other local crop varieties and the restoration of agriculture traditional terraces.



Joint collecting expedition by NARC, SBR and RBG Kew in Jordan to collect plant material of *G. tournefortii* for analysis and training.
© RBG Kew

Key actors involved and their role

RESOURCE PROVIDERS

The States of Jordan and Lebanon

COMPETENT AUTHORITIES

The following institutions have the authority to represent their States in ABS matters and are involved in the development of national ABS legislation. They are also national collaborators in the project (see below).

- The National Agricultural Research Center (NARC) in Jordan
- The Lebanese Agricultural Research Institute (LARI) together with the Shouf Biosphere Reserve (SBR, under the authority of the Ministry of Environment) in Lebanon

NATIONAL COLLABORATORS

- National Agricultural Research Center (NARC), Jordan: NARC is leading the project in Jordan and is responsible for delivering the conservation and cultivation activities at NARC, including species identification and prioritization, and research on seed germination.
- Royal Society for the Conservation of Nature (RSCN), Jordan: RSCN is an independent national organization, which has been given the responsibility by the government to protect Jordan's biodiversity. RSCN supports NARC in its project activities and is leading on the development of marketable produce and products. Moreover, it supports cultivation activities in the communities.
- Lebanese Agricultural Research Institute (LARI), Lebanon: LARI is a governmental organization under supervision of the Ministry of Agriculture. The institute conducts research for the development and advancement of the agricultural sector in Lebanon and works closely with farmers. LARI is in charge with seed collecting and conservation.
- Shouf Biosphere Reserve (SBR), Lebanon: The Al-Shouf Cedar Nature Reserve is the largest nature reserve in the country. SBR is leading the project in Lebanon and is involved in community development to support local communities by providing training and marketing outlets for their products. It supports field work as well.

USER

- Royal Botanic Gardens, Kew (RBG Kew), United Kingdom: RBG Kew hosts the largest and most diverse botanical and mycological collections in the world. RBG Kew investigates in this project traditional knowledge and the biology, phytochemistry, germination and nutritional quality of wild edible species. Moreover, it supports seed collection and conservation, and promotes research findings, dissemination and capacity-building.

The ABS dimension

Activities are carried out under access and benefit-sharing agreements between RBG Kew and partners, in addition to a grant agreement with each provider, to ensure that all legal and ethical obligations of countries are met. The ABS agreements were already in place when the project started, as NARC in Jordan and the LARI in Lebanon have been collaborating with RBG Kew since early 2000s under the MSBP. So far, the partnership has enabled hundreds of seed collections; it secured and conserved 636 indigenous plant species from Jordan and 924 from Lebanon.

In the present project, the partnership is now focusing specifically on the conservation of wild edible species. The ABS agreements were renewed subsequently and grant agreements signed specifically for this pilot project with NARC (at that time named National Center for Agricultural Research and Extension (NCARE)) in Jordan and SBR in Lebanon. RSCN has been associated to the project in Jordan to support the work in the communities, while LARI continues to provide technical support in seed collecting and conservation, working together with SBR. Permits are in place for fieldwork and collection of plant material, also in protected areas, and are managed by the competent authorities.

The agreements regulate the following:

- Species selection: A database on wild edible plant species has been compiled by RBG Kew based on a literature review. A list of 10-15 species was prioritised by partners in Jordan and Lebanon for more detailed research and conservation activities. This included *G. tournefortii*, which is key to both countries and in high demand for the edible inflorescence.
- Seed conservation: Seeds of targeted species are collected for long-term conservation in seed banks. Fieldwork is planned according to the distribution and phenology of the species jointly by RBG Kew, SBR and NARC. Herbarium vouchers are produced for most of the seed collections at SBR, NARC, and RBG Kew where possible.
- Seed research: RBG Kew carry out research on seed biology, including testing seed dormancy and germination requirements characterization.

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- Dissemination: joint publications in international peer-reviewed journals, presentations at international conferences and meetings and a project website. All the contributors have to be acknowledged in publications.
 - The work with communities and the collection of associated traditional knowledge is carried out by the local project partners as part of their mandates.

Agreements provide for the sharing of the following monetary and non-monetary benefits.

Monetary benefits include:

- Funds transferred under grant agreement both to NARC and SBR to carry out activities in their country. In particular, of the 80 000 US\$ project budget, 14 000 US\$ is transferred to Jordan and 14 000 US\$ to Lebanon.

Non-monetary benefits include:

- Access to plant material (i.e. Seed Bank) and exchange of research results/data.
- Information and knowledge transfer from RBG Kew to local partners and communities (i.e. taxonomic identification of material, database produced within the project).
- Joint authorship publications and other forms of dissemination.
- Scientific use and results used to promote conservation, the sustainable use and commercialization of wild edible plants.
- Involvement of local communities.
- Capacity-building: for the pilot project there has been only institutional capacity-building (technical advice for seed banking facilities/equipment for both countries and training in seed collecting and conservation for partners in Lebanon). However, more capacity-building is planned for the future, if more funds are available, to train individuals in local communities in cultivation, seed collecting and product development. This will provide them, particularly women, with new skills with which they could earn an income and provide food for their families.

THE ABS LEGAL FRAMEWORK IN JORDAN AND LEBANON

No ABS legal requirements were in place at the time of the project launch.

2012: Jordan is a Party to the CBD and ratified the Nagoya Protocol.

2017: Lebanon is a Party to the CBD and ratified the Nagoya Protocol. Lebanon does not have a legal framework on ABS.

2019: In Jordan, last steps for the finalization and approval of the ABS bylaw to operationalize the ABS procedures and legal framework were undertaken.

Lessons learned

NATIONAL ABS FRAMEWORK

- RBG Kew ABS expertise and good practices facilitated ABS processes, as Jordan and Lebanon did not have an ABS legal framework in place when cooperation started. Such good practices on ABS include policy advice, regular staff training, an online guide, model agreements and procedures for overseas fieldwork. Model agreements, developed by RBG Kew were adapted to this project and helped to start the process. This case shows that voluntary tools, such as ABS policies, guidelines and codes of conduct, developed by users to guide their activities in foreign countries are important to develop and implement ABS measures in provider countries.

BENEFIT-SHARING

- ABS processes contribute to the conservation and sustainable use of natural resources (wild edible plants) as well as to the livelihoods of local communities in both provider countries.

RELATIONSHIP AMONG USERS AND PROVIDERS

- A long-term and trustful collaboration is important for implementing ABS. In this case, the NARC in Jordan and the LARI in Lebanon have been collaborating with RBG Kew since early 2000s. They are part of the MSBP aiming at conserving the flora of Jordan and Lebanon by collecting and conserving seeds for many important and indigenous plant species.

Contribution to the Sustainable Development Goals (SDGs)



SDG 1, target 1.4: The sharing of knowledge on the sustainable use and commercialization of wild edible plants with local communities contributes to poverty alleviation.



SDG 2, targets 2.1, 2.3, 2.4, 2.5: The restoration of traditional Eastern Mediterranean diet is supported through the conservation of wild edible plant species (genetic diversity) and by preserving associated traditional knowledge. ABS processes in this project limit food insecurity and strengthen local production and consumption, as well as the resilience and adaptive capacity of small-scale and family farmers and of indigenous people. Access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge is promoted.



SDG 4, targets 4.7, 4.b: Benefit-sharing within the project includes building technical and scientific capacity for the collection, conservation and sustainable use of genetic resources from wild edible plants. In the pilot project, this is limited to institutional capacity-building, though this will be cascaded by partners to the local communities, as part of their institutional activities.



SDG 13, targets 13.1, 13b: The ABS activities strengthen resilience and adaptive capacity to climate change as germination requirements of edible plants under different climate change scenarios are investigated. This knowledge will be shared with local communities.



SDG 15, targets 15.1, 15.4, 15.5, 15.6, 15.a: Conservation, sustainable use and the fair and equitable sharing of benefits arising from the utilization of biodiversity are supported through ex-situ conservation and knowledge sharing. This project prevents the extinction of threatened wild species through seed banking and mobilizes resources for partners. Through the phytochemical analysis the project looks at the nutritional value of plants with the intent to promote the Mediterranean diet and in turn the conservation and sustainable use of indigenous edible plants.



SDG 17, targets 17.1, 17.6, 17.7, 17.9: The project enhances partnership and knowledge sharing with providers. Innovation and sustainable development are promoted, and financial resources mobilized as monetary and non-monetary benefits.

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The valorisation of the biodiversity of Sarawak through a multi-stakeholder ABS partnership in Malaysia *Asia*



Fresh fruits on Litsea tree
© Sarawak Biodiversity Centre

OVERVIEW

A multi-stakeholder ABS partnership involving indigenous communities for the development of personal care products based on research carried out in Sarawak on the active properties of a local tree.

SUBJECT MATTER

Litsea cubeba, a small tree that grows in the forest highlands of Sarawak

COMMERCIAL USE

Research carried out on the active properties of *Litsea cubeba* for the development of personal care products, including soap, shampoo, air freshener and essential oil for aromatherapy

PROVIDER COUNTRY

Malaysia (Party to the Nagoya Protocol)

DESCRIPTION OF THE CASE

Litsea cubeba is a small tree that grows in the forest highlands of Sarawak up to 2300 metres above sea level and is also found in other countries of the region. Researchers from the Sarawak Biodiversity Centre (SBC) initially came across the tree in 2005 during a field trip carried out with the Lun Bawang of Long Telingan, a community of the highlands, as part of the SBC's Traditional Knowledge documentation programme aimed at preserving knowledge on the traditional use of plants found in this area.

Its small berry like fruits were used by a number of communities in the region as a culinary condiment and its fruits and leaves were used to relieve stomach and backaches. The leaves were also found to emit a citrus like energizing smell.

With the prior informed consent of the communities, SBC carried out traditional knowledge documentation and extracted essential oil from the fruits and leaves at its laboratories for further analysis. Components of the essential oil were found to have anti-microbial, anti-inflammatory and repellent properties. Although the same species is also found in other countries of the region, the essential oil extracted from trees in Sarawak was found to have particular properties due to its unique composition. The Sarawak Government registered a geographical indication for *Litsea cubeba* as Sarawak Litsea and obtained a trademark for the essential oil, LitSara®. Sarawak Litsea is uniquely different compared to other *Litsea cubeba* from other countries in terms of its essential oil chemical composition.

Further to the signature of a benefit-sharing agreement between SBC and five communities, the oil was developed into a range of natural personal care products, including soap, body wash, shampoo, air freshener, hand wash and essential oil for aromatherapy. The products are available online for retail (www.litsara.com) and sold in some outlets in Sarawak. They are also promoted at the Sarawak Trade and Tourism Office in Singapore.

Key actors involved and their role

COMPETENT AUTHORITY

Ministry of Urban Development and Natural Resources, Sarawak: The state of Sarawak, Malaysia, is located on the island of Borneo, a world renowned biodiversity hotspot. In accordance with the Constitution of Malaysia, a federal state, states have competence over their natural resources. Of the 13 states that constitute Malaysia, Sabah and Sarawak are granted greater autonomy, in particular in the management of their biological resources. In light of the bioeconomy's potential, the state of Sarawak has been promoting the valorization of its rich biodiversity by recognizing the valuable knowledge of its communities and supporting the research capacities of the Sarawak Biodiversity Centre.

RESOURCE PROVIDER

Indigenous communities: Five communities are involved in planting the *Litsea* trees, sustainably harvesting the fruit and leaves and extracting the oil: Bidayuh of Kampung Kiding in Padawan, Kuching; Kelabit of Pa'Ukat and Pa'Lungan in Bario, Miri; Lun Bawang of Long Kerebangan and, Long Telingan in Lawas. *Litsea* plants are also found in other communities that hold similar traditional knowledge. These communities will also be invited to join the project which will enable the expansion of the supply chain.

USERS

Sarawak Biodiversity Centre: Thanks to the documentation of the traditional knowledge shared by communities of the region and its scientific research capacities, SBC enabled the identification of the active properties of the *Litsea cubeba* and the development of a range of products.

Interhill Group of companies: In 2017-2019, the Interhill Group of companies which owns Pullman Kuching and Pullman Miri Waterfront hotels also collaborated with SBC to promote and sell LitSara® products as souvenir sets of natural personal care products at Pullman Kuching and Pullman Miri Waterfront Hotel Lobby. This collaboration agreement is described as a corporate social responsibility initiative, through which Interhill and its hotels contribute to the livelihood of communities by promoting products from Sarawak's biodiversity, based on research carried out in Sarawak thanks to the knowledge of its communities.

The ABS dimension

Over the years, the Sarawak Government has taken a number of steps to protect its valuable biological assets and harness their potential. Following the adoption of the Nagoya Protocol, this case evolved in the context of a project (SBC/GEF/UNDP/Ministry of Natural Resources and Environment) aimed at supporting the implementation of the Nagoya Protocol. As part of this project, a number of ABS awareness-raising and capacity-building activities were initiated in 2014 involving government agencies, research institutions, universities and communities and were carried out over a period of five years. This project led to the development of an ABS framework and to the amendment of the Sarawak Biodiversity Centre Ordinance in 2014 to include new provisions on access and benefit-sharing.

This process also provided the opportunity to inform discussions and negotiations which led to prior informed consent of the communities involved and to the signature of a benefit-sharing agreement between the SBC and five communities on 20 March 2019.

The agreement respects the ABS requirements of the National ABS Act 2017 as well as those of the state of Sarawak reflected in the Sarawak Biodiversity Centre Ordinance 1997 and its amendments, and the Sarawak Biodiversity Regulations 2016 (see further details on ABS legal framework in box 1 below).

The benefit-sharing agreement provides for the sharing of monetary and non-monetary benefits to be evenly distributed amongst the five communities.

Monetary benefits include the purchase of essential oil from the communities involved in its distillation as well as a percentage of sales from the product.

The percentage from the sales of the product is shared on a half yearly basis and paid to a community fund. The fund is established and managed by the communities who decide on the use of funds. Funds have contributed to the maintenance of the distillation sheds and other activities related to the project or the communities.

Non-monetary benefits include the empowerment of communities through capacity-building and the establishment of facilities for essential oil distillation. SBC has trained communities on plant propagation and sustainable harvesting through Good Wild Craft Practice (GWCP). As a result, communities are conserving the plant resource and the areas where these plants are found. Through co-funding from SBC and GEF/UNDP, a distillation shed was built in the communities and distillation equipment was provided. In exchange, the communities have committed to supply a certain amount of oil. According to some news articles, 40 litres of the essential oil were supplied to SBC in 2019 and it takes 130kg of leaves or 30kg of fruit to produce one litre of oil. Out of a population of 200 to 500 people per village depending on the village, approximately 8 to 22 people are involved in oil production.



Completion of a benefit-sharing agreement signing
© Sarawak Biodiversity Centre

THE ABS LEGAL FRAMEWORK IN SARAWAK, MALAYSIA

- 1963:** Federal Constitution establishes the autonomy of states on forests.
- 1997:** The role of the state of Sarawak in protecting its valuable biological assets and harnessing their potential recognized by the Sarawak Biodiversity Centre Ordinance.
- 2003:** Amendment to Sarawak Biodiversity Centre Ordinance establishes Sarawak Biodiversity Centre's role in documenting the traditional uses of biological resources by its native communities and in carrying out research and development on its biodiversity.
- 2014:** Amendment to Sarawak Biodiversity Centre Ordinance to include reference to prior informed consent and benefit-sharing based on mutually agreed terms.
- 2016:** The Sarawak Biodiversity Regulations are adopted and set out specific ABS requirements.
- 2017:** The Government of Malaysia adopted the Access to Biological Resources and Benefit Sharing Act 2017 (Act 795). The Federal law does not restrict the right of a state to regulate access to biological resources and benefit-sharing in a manner consistent with the objective and provisions of the federal law. (section 3.3)
- 2018:** Malaysia accession to the Nagoya Protocol on 5th November 2018.

Lessons learned

VALORIZATION OF BIODIVERSITY AND TRADITIONAL KNOWLEDGE

- Government strategy to valorize its biodiversity and the knowledge of its communities and to build on its research capacity contributed to the success of this case.
- Recognition of the value of biological diversity and the importance of its conservation by all actors
- Recognition of the value of traditional knowledge and the important role of indigenous communities in conserving and sustainably using biological resources
- Long-term partnerships along value chain contribute to the valorization of biological resources and associated traditional knowledge.

BENEFIT-SHARING

- Monetary benefits can contribute to improving the livelihood of communities.
- Non-monetary benefits can contribute to enhance and develop new skills in the communities.

ELEMENTS THAT SUPPORT THE PROCESS

- Empowerment of communities and continuous dialogue amongst representatives from the government, research institution and communities over a period of five years enabled the conclusion of access and benefit-sharing agreement.
- Technical and financial support provided through a capacity-building project usefully contributed to the development of the ABS framework and to the development of an agreement between SBC and the communities.

Contribution to the Sustainable Development Goals (SDGs)



SDG 1, target 1.4: The development of LitSara® products based on the sustainable harvesting of *Litsea cubeba* contributes to the livelihood of communities



SDG 5, targets 5.5, 5.a: Empowerment of communities through capacity building also enables women in the community to realize their potential as contributors to their families' incomes and as drivers of innovation in their community.



SDG 8, target 8.3: Through the Sarawak Biodiversity Centre Ordinance, the State of Sarawak has recognized the value of its biodiversity and associated traditional knowledge and harnessed their potential through the Sarawak Biodiversity Centre (promoted development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation)



SDG 9: targets 9.5, 9.b: The Sarawak Biodiversity Centre enhances scientific research and innovation domestically based on local resources (ABS as a tool to support domestic technology development, research and innovation in developing countries).



SDG 12, target 12.2: The development of this value chain and the partnership established contribute to sustainable management and efficient use of natural resources.



SDG 15, targets 15.2, 15.6, 15.9: Sustainable harvesting of *Litsea cubeba* contributes to the sustainable management of forests. Through this partnership, local planning has integrated biodiversity values and contributed to the development. The ABS framework enabled appropriate access to the resource and fair and equitable sharing of benefits.



SDG 17, targets 17.6, 17.9: This multi-stakeholder partnership enabled the mobilization and sharing of knowledge, expertise, technology and financial resources. The capacity-building project also contributed to the development of sustainable development plans.

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Reflecting ABS principles in a biodiversity catalogue of the Caucasus *Asia*



ZFMK members teaching Georgian students at the ISU research field station in Grigoleti, Georgia © Giorgi Iankoshvili

OVERVIEW

A long-term partnership between academic institutions to map biodiversity in the Caucasus, on the basis of a commitment to ABS principles and to enhancing local research infrastructure and capacities.

SUBJECT MATTER

Specimens and genetic material of animals and plants

SCIENTIFIC USE

Activities conducted for scientific and educational purposes included:

- Assessing and monitoring Caucasian biodiversity through citizen science, classical and molecular taxonomy, and metabarcoding
- Collecting material for zoological and botanical collections and biobanks
- Gathering data sequence information (DSI) in freely available database

PROVIDER COUNTRIES

Georgia and Armenia (Non-Parties to the Nagoya Protocol)

DESCRIPTION OF THE CASE

In 2017, scientists from Ilia State University in Georgia and the Zoological Research Museum Alexander Koenig (ZFMK) in Germany launched a collaborative initiative to establish a Georgian-German Biodiversity Center (GGBC), with the aim of exploring species and genetic diversity of animals and plants in the Caucasus region, a global biodiversity hotspot. The project, supported by the German Federal Ministry of Education and Research (BMBF), came to an end in autumn 2020.

The success of this first pilot project led to a follow-up project, the Caucasus Barcode of Life project (CaBOL), with wider scope and additional funding from BMBF. Additional partner institutions from Georgia (Agricultural University, Tbilisi) and Armenia (Yerevan State University, Scientific Center for Zoology and Hydroecology) are involved in CaBOL. This project aims to conduct comprehensive and applied biodiversity research using classical and molecular techniques. Identified DNA barcodes of species are stored in a reference database and made publicly available. The project is based on the experience gathered by German scientists from ZFMK with a previous project, the German Barcode of Life (GBOL¹).

In relation to ABS principles, the projects foster international collaboration, improve science infrastructures, engage in education and explore Caucasian biodiversity. Both projects support capacity-building (e.g., trainings of researchers on molecular techniques, build-up of a database) in Georgia and Armenia. The GGBC and CaBOL projects also contain citizen science components. All partners receive funding for staff and infrastructure

¹ GBOL: The GBOL project aims at capturing the genetic diversity of animals, fungi and plants in Germany.

GBOL builds a comprehensive DNA Barcode reference library and is developing applications, which benefit from a molecular identification system.

and are involved in curricular development. The central laboratory of the consortium is located at Ilia State University (Tbilisi, Georgia). It is used by scientists from Germany, Georgia and Armenia, as well as from neighbouring countries, and will be open in the future to researchers from other countries equally interested in Caucasian biota.



Mountain panorama in Georgia
© Museum Koenig

Key actors involved and their role

RESOURCE PROVIDERS

Collecting of material conducted within and outside of protected areas in various regions of Georgia, including the Kintrishi Protected Areas, at the ISU field station in Grigoleti, in the Stepantsminda area (Kazbegi) in the Greater Caucasus and at Vashlovani National Park. Since 2020 collecting is extended to Armenia.

COMPETENT AUTHORITIES

- Ministry of Environmental Protection and Agriculture, Georgia
- Agency of Protected Areas, Georgia
- Ministry of Environment, Republic of Armenia

NATIONAL COLLABORATORS

- Ilia State University (ISU), Tbilisi, Georgia: ISU focuses on scientific advancement and transferring top-notch knowledge to facilitate societal development. The Georgian-German Biodiversity Center has been set up at ISU. In addition, in Phase 2 staff from partner institutions are trained at ISU.
- Agricultural University of Georgia (AUG), Tbilisi, Georgia: AUG is the country's most important University of agricultural research. The university will contribute to the project by adding samples and expertise on local biodiversity and abiotic factors affecting it.
- Yerevan State University (YSU), Armenia: YSU is the oldest continuously operating public university and leading scientific institution in Armenia. The Department of Biology has a large scientific collection. A small supporting DNA lab will be built up at YSU and staff will be trained at ISU.
- Scientific Center of Zoology and Hydroecology (SCZHE), Armenia: The main research activities of the Center include studies on water and land ecosystems and the assessment of bioresources, conservation methods and educational activities. SCZHE contributes to the project with samples and expertise on local biodiversity and abiotic factors affecting it.

USERS

- Zoological Research Museum Alexander Koenig (ZFMK), Bonn, Germany: ZFMK is an independent Leibniz Institute for Animal Biodiversity and one of the largest natural history research museums in Germany. ZFMK performs an inventory of the zoological species diversity of the Caucasus region at morphological and molecular level and is strongly engaged in capacity-building.
- Nees Institute for Biodiversity of Plants, University of Bonn, Germany: The Nees Institute carries out research and education on plants, in close collaboration with the Botanical Gardens Bonn. The Institute contributed to plant research within the project.
- Burckhardt-Institute, University of Göttingen, Germany: The Institute contributes with remote sensing approaches to the project.
- Institute for Integrated Natural Sciences, University Koblenz-Landau, Germany: The Institute contributes to the project by coordinating the botanical inventories and plant DNA barcoding.

The ABS dimension

In the absence of national ABS measures in Georgia and Armenia, no specific permits were required in relation to access to genetic resources.

In Georgia, collection permits were granted by the Ministry of Environmental Protection and Agriculture and the Agency for Protected Areas in 2018 and 2019. In addition, clearance letters, which served as export permits, were provided in 2018 and 2019 by Ilia State University. In Armenia, collection permits were granted by the Ministry of Environment.

Although no benefit-sharing agreement is in place, project objectives and approach promote sharing of both monetary and non-monetary benefits:

Monetary benefits: More than half of the BMBF financing of CaBOL will be invested in the Caucasus. In particular, the project provides financial support for personnel and infrastructure to provider countries:

- Seven scientist positions, three technicians as well as numerous student assistants
- New laboratory infrastructure and field work

Non-monetary benefits include:

- Six one-semester trainings for Armenian students at ISU in Tbilisi
- Trainings for local researchers on molecular techniques
- Establishment of an International graduate school
- Open access DNA-barcode reference database for the Caucasus, with inter-connected morphological and molecular collections on Caucasian biodiversity
- Scientific co-operation (joint publications, events and excursions, student exchange to ZFMK and events)

THE ABS LEGAL FRAMEWORK IN GEORGIA AND ARMENIA

1993: Armenia became a Party to the CBD but is not a Party to the Nagoya Protocol.

1994: Georgia became a Party to the CBD but is not a Party to the Nagoya Protocol.

No ABS measures have been adopted in Georgia and Armenia.

Lessons learned

NATIONAL ABS FRAMEWORK

- Although Georgia and Armenia have not ratified the Nagoya Protocol or adopted ABS measures, ABS played an important role in the first project phase and will be also an important element of the second phase thanks to ZFMK's long history of project partnerships in several countries and its strong engagement on ABS matters within its own institution and beyond. This shows that in the absence of ABS measures in provider countries, voluntary tools such as guidelines and codes of conduct can be useful to ensure that users respect ABS principles and share benefits (see below).

BENEFIT-SHARING

- Involvement of local communities through knowledge transfer and citizen science and creation of new jobs (employment of local scientists and technicians) enhances research activities and capacity-building in the provider countries.
- Technology transfer is important, including by facilitating access to modern molecular research and database technology, as well as to collections and information on genetic diversity.

RELATIONSHIP BETWEEN USERS AND PROVIDERS

- Access to genetic resources is facilitated by long-term and trust-based cooperation with local scientists and authorities, together with benefit-sharing arrangements supporting capacity-building and research and educational infrastructure.
- The distinction between user and provider is not always clear. In these projects, especially CaBOL, both sides can be considered 'users.' For example, in CaBOL, it is Caucasian partners that will be the main (and sometimes even the only) users of many of the project samples.

SUPPORT THROUGH CAPACITY-BUILDING PROJECTS

- Capacity-building is essential to ABS processes. In these projects, initial phases targeting investment in science and education in Georgia were important ways to foster international collaboration and capacity-building at academic and non-academic levels.

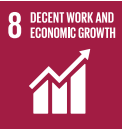
OTHER SUPPORTIVE MECHANISMS

- ZFMK established an ABS contact person within the museum staff, for internal and external communication and advice and developed ABS guidelines for its researchers.
- ZFMK is a member of the Consortium of European Taxonomic Facilities (CETAF), which has developed a "Code of Conduct and Best Practice for ABS", and of the Global Genome Biodiversity Network (GGBN), which develops best practices related to management and stewardship of genomic samples and their derivatives also covering ABS.

Contribution to the Sustainable Development Goals (SDGs)



SDG 4, targets 4.7, 4.b: These projects advance quality education, citizen science and capacity-building at academic and non-academic level. Scientific careers are supported by non-monetary benefits and monetary benefits, including academic cooperation, exchange of scientists and students, trainings on molecular methods and joint publications.



SDG 8, target 8.5: Benefit-sharing has resulted in job creation for scientists and technicians in the field of biodiversity research. Both projects foster decent work in the provider countries.



SDG 9, targets 9.1, 9.5, 9.a: Benefit-sharing, which included the establishment of a Georgian-German Biodiversity Center (GGBC), supported innovation and the building of research infrastructure. Innovation will be further promoted by mirrored collections in the Caucasus and Germany, applied biodiversity research, and the development of an open access DNA barcode reference database for the Caucasus region. Both projects provide increased access to modern molecular research and database technology. New innovation infrastructure was supported as monetary benefit. The sharing of scientific and technological knowledge remains an important non-monetary benefit of the projects.



SDG 15, targets 15.1, 15.4, 15.5, 15.6, 15.a: Both projects contribute to non-monetary benefit-sharing by the exploration of Caucasian biodiversity, particularly fauna and flora. Resulting information will support biodiversity management decisions and biodiversity conservation in Georgia and also in Armenia.



SDG 17, targets 17.3, 17.6, 17.8, 17.9: The GGBC, established through these projects, has been the basis for a long-term and successful partnership, which provides an important non-monetary benefit and sets the ground for future collaboration. Future developments will include more partners from Georgia and Armenia, leading to a Caucasian Barcode of Life initiative, and will be open to researchers worldwide with interest in the Caucasian biota.

Relevant contacts/sources of information:

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Basic research on marine coral reef organisms from Fiji

Asia-Pacific



ICBG associate program managers during collection trip © ICBG

OVERVIEW

A long-term partnership for basic research on natural products for pharmaceutical applications against neglected diseases.

SUBJECT MATTER

Marine invertebrate and microbials

SCIENTIFIC USE

Basic research on antimicrobial, anti-neurodegenerative, anti-tuberculosis, anti-malaria, anti-cancer secondary metabolites potentially suitable for anti-infectives production

PROVIDER COUNTRIES

Fiji (Party to the Nagoya Protocol)

DESCRIPTION OF THE CASE

The Fiji International Cooperative Biodiversity Group (ICBG) project investigated potential new therapeutic agents in marine coral reef organisms and promoted marine biodiversity conservation. The project spanned over a period of 15 years ending in 2019. The collaborating partners were the Georgia Institute of Technology (GIT), the University of California's Scripps Institution of Oceanography (SIO), the University of the South Pacific through the Institute of Applied Sciences (IAS), and the Fiji Ministry of Fisheries and Forests together with an industrial partner that withdrew from the partnership due to an internal restructuring. The project secured access to marine samples and established ad-hoc benefit-sharing practices and assisted government in establishing mechanisms to facilitate bioprospecting. Its aim was to conduct algae and invertebrate collection and sediment collection for microbial isolation, extraction and natural product isolation. By providing training and technology transfer, the project promoted reef conservation through education, scientifically-based management training initiatives, and biodiversity-based income generation.

Work within the consortium mainly concentrated on research and development efforts on natural products for pharmaceutical applications against diseases such as tuberculosis, malaria, cancer and Alzheimer. Further targeted research and testing was conducted in the external laboratories of ICBG partners and the results were then shared with consortium partners. The Fiji ICBG project was a U.S. government funded programme jointly sponsored by the National Institutes of Health (NIH), the National Science Foundation (NSF), and the United States Agency for International Development (USAID).

Key actors involved and their role

RESOURCE PROVIDER

More than 20 local communities, customary fishing ground owners, managed the project sampling collection sites where samples were collected from. They were the primary local beneficiaries of the project based on access agreements.

COMPETENT AUTHORITY

At the time of the case, no competent national authority had been established for access and benefit-sharing. However, relevant ministries included the following:

- The Ministry of Fisheries and Forests (MoFF) is the legislative authority to issue permits for samples collected from the marine and terrestrial environments. The ICBG programme in Fiji dealt with MoFF to obtain export permits for samples and also established an MoU.
- At the time of the case, no competent national authority had been established for access and benefit-sharing. However, relevant ministries included the following:
- The Ministry of Fisheries and Forests (MoFF) is the legislative authority to issue permits for samples collected from the marine and terrestrial environments. The ICBG programme in Fiji dealt with MoFF to obtain export permits for samples and also established an MoU.
- The Ministry of Water Ways and Environment (MoWE) is Fiji's CBD focal point, also responsible for access and benefit-sharing.
- The Ministry of I-taukei Affairs (MTA) has a critical role in protecting the customary roles of communities within Fiji, including traditional knowledge, roles in governance and the strong linkages between natural resources and community livelihoods. It facilitated access to communities through provincial level administrators.

FACILITATOR

- The Pacific Natural Products Research Centre (PNPRC) at the Institute of Applied Sciences (IAS) of the University of the South Pacific (USP), in Fiji, was the coordinating and liaising unit with the government of Fiji and the communities on access and permitting.

USER

- Georgia Institute of Technology (GIT), USA: The GIT team assisted with technology transfer and know-how on collection and screening for compound identification with an emphasis on macro samples (e.g. sponges, soft corals and algae). It also provided in depth research on ecological processes and patterns and developed conservation measures. In addition, they led the collection teams for the sampling and the development of search strategies for collections.
- Scripps Institution of Oceanography (SIO), University of California, USA: The SIO was mainly involved with technology transfer and know-how with respect to collection, screening and compound identification of marine bacteria. They also provided guidance on graduate student's research projects, including hosting students at their institute for capacity-building in natural products research. In addition, they guided the PNPRC team on the prioritisation of strains, project design and techniques and methods to be used.

The ABS dimension

Fiji ratified the Nagoya protocol in 2011, seven years after the ICBG project was initiated. In the absence of ABS regulations, the project was based on an ad-hoc access and benefit-sharing (ABS) policy consistent with the Convention on Biological Diversity. In 2006, the partners signed a legally binding partnership agreement and drew up a framework for bioprospecting. Without official ABS requirements in place, the project was carried out on the basis of the partnership agreement (not to be taken as Fiji's current approach) which was in line with ABS best practices.

Before initiating collections, the team conducted the following:

- The ICBG administrator submitted a letter of intent to the provincial administrator for a major collection expedition
- The provincial administrator contacted local communities
- Prior informed consent (PIC) was obtained from local communities
- Permit was granted by local authorities and land owners through an MoU
- Permits were issued for samples according to government requirements (e.g. permit's requested from MoWE for CITES listed samples such as corals) when sending samples overseas

USP as the local partner was responsible for liaising with local authorities and communities for access to resources and for obtaining permits from relevant government departments.

Monetary benefits: Benefit-sharing arrangements were well defined and documented in the 2006 ICBG partnership agreement. In the event of a discovery, mechanisms were established for benefit-sharing whereby further negotiation would be needed should there be any commercial interest in the research. If a derivative is commercialized, profits are shared in a 50% portion between USP, Fiji, and the US partners. Clauses in the partnership agreement allowed for a derivative to be developed further by interested third parties for commercialisation as long as prior approval was obtained and proper consultations were conducted with all stakeholders. However, within the lifetime of the project lifetime - no derivative has been commercialized. The USP was to see that all benefit-sharing at the local level is distributed equitably with local resource owners and the government from their share.

With respect to intellectual property rights, in accordance with the partnership agreement, sole inventors hold rights to patents for research originating from their lab and filing and maintenance costs are paid by the lab itself, in this instance by collaborative partners at GIT, in the USA, who have found new molecules. USP as a partner would be included in the filing for a patent or licensing where appropriate, and acts as a focal point to coordinate the distribution of benefits between developers and the local communities should monetary value be acquired from a licensing or royalty from the commercialisation of a molecule.

Furthermore, monetary benefits included a contribution to research funding for young researchers at USP. Other monetary benefits were its contribution to the Fijian economy in the form of its initial investment to the tune of approximately FJD 1 million in its first term from 2006 to 2009. Other monetary benefits included fringe benefits in terms of financial contributions made towards the lodging fees and logistical support for the teams including boat transport during their collections.



Coral reef
© unsplash/@marc0521

Non-monetary benefits: Non-monetary benefits entailed training of local scientists in the field of natural products chemistry and microbiology, contribution to conservation sciences especially marine conservation management from a bottom up approach which empowered communities to sustainably manage their own resources. One example is the Navakavu project where a locally managed marine area was established. Non-monetary benefits further comprised contribution to purchasing of equipment and a boat to aid in conservation efforts at the site as was the case in Navakavu. Local communities benefited from marine conservation management workshops which built capacity for communities to look after their environment. Since the inception of the project, a total of 17 students have completed their masters of sciences degree with 40% of these moving on to embark on doctoral studies. Gender equality was addressed through student in-take with at least 35% of the unit members being females.

With the support of the Global Environment Facility (GEF), an implementation project for the Nagoya Protocol was conducted in Fiji (2014-2019). Experience from the ICBG project, including documents developed to address ABS principles, provided useful background information in the development of the ABS framework.

THE ABS LEGAL FRAMEWORK IN FIJI

1993: The National Environment Strategy

1997: Sustainable Development Bill (Revision in 1999) includes references to the administrative responsibility in respect of biodiversity and sets out the provisions for protected areas and biodiversity protection

2005: Environment Management Act (amended 2019)

2007: The Fiji National Biodiversity Strategy and Action Plan

2012: Ratification of the Nagoya Protocol

2017: National Biodiversity Strategy and Action Plan for Fiji 2017-2024

Ongoing discussion on a national ABS framework

Lessons learned

NATIONAL CONTEXT

- Partnership agreements allowing for benefit-sharing had been established before Fiji ratified the Nagoya Protocol.
- In-depth knowledge of ABS concepts at all levels from authorities, to researchers and local communities, especially at decision making level, helped to facilitate negotiations and implement the project.

ELEMENTS THAT SUPPORT THE PROCESS

- Encouraging local participation at every stage of the process by maintaining open communication between all stakeholders (local leaders, village and community, customary or community-based management efforts) including those that are not formally recognised by national law facilitated the process as a lack of recognition of the contribution of these traditional management actors may hamper the cooperation and biodiversity conservation.
- A shared vision among stakeholders underpins the success of the project, as evidenced by healthy ecosystems and communities, and an increased understanding of what communities are doing and can do to manage marine areas. In Fiji, monitoring has demonstrated the real impact of engaging local communities in economic and ecological terms: increased harvests and sustainability of marine resources.
- Awareness of the fact that direct monetary benefits from sample collection are not likely to be significant can help manage expectations between user and provider.
- Awareness of the depletion of resources has stimulated resource-owners' interest in ABS and conservation.
- A regional network or a forum to discuss the implementation and adaptation of the ABS policy at the different national levels is important to consider when the same species can be found across several States. Such a forum also offers a space to address revenue-sharing mechanisms adapted to community aspirations and government needs of each Pacific member state.
- Maintaining and increasing training of Pacific Island nationals in natural products chemistry and microbiology with an emphasis on the marine environment and biosystematics is important for ensuring that local capacity and knowledge is gained and retained.

Contribution to the Sustainable Development Goals (SDGs)



SDG 9, target 9.5: The monetary and non-monetary benefits contributed to research infrastructure, education and training in laboratory techniques. By supporting students and academic learning, the project indirectly stimulated innovation. The project built the capacity of local researchers and students on the use of the latest technology and data interpretation in the field of natural products chemistry.



SDG 14, targets 14.2, 14.7, 14.a: The project contributed to the exploration of marine biodiversity. It also contributed to conservation efforts through community-based management efforts involving local communities. Thanks to the project, the economic benefits from the sustainable use of marine resources increased. The cooperation between the University of the South Pacific and the two US Universities built research capacity and increased scientific knowledge in the Pacific region. Such international partnerships among universities can support complex scientific work.



SDG 17, target 17.16: The project formed partnerships among international higher education institutes, researchers as well as across local communities.

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An ABS agreement for the use of orchids from Bhutan

Asia



The orchids
© Chendo Dorji

OVERVIEW

An ABS agreement for the use of orchids in ingredients for cosmetics.

SUBJECT MATTER

Cymbidium erythraeum, an edible orchid

COMMERCIAL USE

Research focused on the cellulose from the cells of the orchid for use in the development of a cosmetic cream.

PROVIDER COUNTRIES

Bhutan (Party to the Nagoya Protocol)

DESCRIPTION OF THE CASE

Bhutan's biological diversity is of global significance and immense scientific value thanks to a high level of diversity and a relatively good state of preservation. 469 species of orchids can be found in the Himalayan state, many of which are endemic to Bhutan. Orchids are used for different purposes in Bhutan. Many species are utilised in traditional medicine, an essential element of health care in remote areas, while others are consumed as food ingredients. Wild orchid species, protected under the Forest Act, are also an attraction for eco-tourism.

Nature conservation is deeply rooted in the Bhutanese Constitution and the country's policy framework. The National Biodiversity Centre (NBC) manages biodiversity conservation and sustainable use. It promotes collaboration for technology transfer, enhancement of technical capacity and collaborative research. Due to initiatives of NBC, species with previously unknown medicinal or other properties, such as the edible orchid *Cymbidium erythraeum*, have acquired commercial value.

In 2009, the company Quantum Pharmaceuticals Limited (QPL) applied to the Ministry of Agriculture and Forests for a permit for research on and commercial use of the *Cymbidium erythraeum* species. The research focused on the cellulose from the cells of the orchid to be used for the development of a cosmetic cream. The commercial potential created increased the demand for orchids. The *Cymbidium erythraeum* species was previously not cultivated and mostly collected from the wild. In line with the Biodiversity Act of Bhutan, NBC and QPL signed a Memorandum of Agreement (MoA). The MoA aimed at conserving the orchids while allowing commercial activities, including the sharing of benefits with local communities. Under the MoA, a group of eighteen households in Samtengang (a village in Nisho Gewog, Wangduephodrang selected by NBC) started to engage in propagating *Cymbidium erythraeum* as an ingredient for cosmetics.

The NBC facilitated the ABS process from the initial request for access until the conclusion of negotiations of the ABS agreement. Once a location was identified for the sourcing of the orchids, a consultation process was initiated, which included a participatory rural appraisal, to form a community group called the 'Samtengang Orchid Management Group' for the propagation and management of the orchid. The local community with support from the mandated officials formulated a community by-law (also referred to as community protocol) detailing the process for obtaining prior informed consent (PIC) and establishing mutually

agreed terms (MAT) and benefit-sharing with respect to the utilisation of their resources. NBC facilitated the interaction between the company and the community group and negotiated the final ABS agreement on behalf of the community. Only with the approval of the local community, the project was pushed forward. 18 households of the Samtengang Orchid Management Group became joint providers of *Cymbidium erythraeum* flowers to QPL.

Key actors involved and their role

RESOURCE PROVIDER

The Orchid Management Group, a local community in Samtengang, Bhutan, consisting of 18 households are the resource providers involved in propagating and harvesting orchids (*Cymbidium erythraeum*).

NATIONAL COMPETENT AUTHORITY

Ministry of Agriculture and Forests of Bhutan

USER

Quantum Pharmaceuticals Limited (QPL), a developer and supplier of unlicensed medicines and hard-to-source products, in Switzerland.

FACILITATOR

The National Biodiversity Centre (NBC), under the Ministry of Agriculture and Forests, is the national focal agency for biodiversity conservation and sustainable use. It oversees procedures with regards to all explorations of biological resources as the authorized agency for the facilitation of ABS agreements. In cases of collective or joint ownership, NBC acts on behalf of the providers.

The ABS dimension

The ABS Policy from 2015 requires users to submit a proposal to the National Focal Point, who will consult the local community concerned. If prior informed consent is granted, negotiations for a scoping and an ABS agreement will follow. Once the parties agree on the terms, the competent national authority endorses the terms and the agreement is signed.

In 2009, at the time of the case, detailed procedures for ABS agreements were not yet in place. QPL as the user signed a memorandum of agreement with the NBC acting on behalf of the providers. On request of QPL, the NBC granted a permit for commercial use as prior an agreement had been signed. The agreement between the company and NBC entailed conditions for access and utilisation, specification and quantity of genetic resources to be accessed as well as details regarding monetary and non-monetary benefits to be shared with the Samtengang Orchid Management Group.

Monetary benefits: The agreement foresees that each household receives a premium price when the genetic resources are accessed and royalties from the sales of the cosmetic product. Hence, income generated from orchid flowers from the propagation house is managed via a community fund governed by the newly developed by-law (a community protocol).

Moreover, QPL agreed paying into the Bhutan Access and Benefit Sharing (BABS) Fund. The fund was set up to support the conservation and sustainable use of Bhutan's biodiversity and to enhance rural livelihoods. The fund also complements and offsets the costs of conservation for Bhutan.

Non-monetary benefits: Additionally, the agreement includes a number of non-monetary benefits. Each time QPL accesses orchids, a material transfer agreement (MTA) is signed by the company and NBC under the purview of the memorandum of agreement. QPL agreed on establishing an orchid propagation house. Each participating household contributed plants for the mother stock of the propagation house from their individual household collection. Further, the community received training on the propagation of orchids.

QPL successfully developed and placed on the market a cosmetic product containing extracts of *Cymbidium erythraeum*. Further, the company has successfully filed a first patent in Bhutan and has secured patents in a few other countries. The agreement included a clause which confirms that any intellectual property rights (IPRs) arising from it will be mutually discussed and agreed. The patent relates to the use of extracts for cosmetic skin treatments, in particular skin changes due to aging (e.g. wrinkles, loss of firmness and elasticity, and increased pigmentation). In line with its engagement but independent from the ABS case, QPL funds additional CSR projects in Bhutan for orchid propagation.



Mountain panorama in Bhutan
© Pema Gyamtsho

THE ABS LEGAL FRAMEWORK IN BHUTAN

- 2003:** The Biodiversity Act was enacted on 4th August 2003. The Act included an initial policy on access to genetic resources and associated traditional knowledge (ATK). Experience since 2003 as well as the adoption of the Nagoya Protocol triggered the need for a comprehensive access and benefit-sharing policy to guide ABS implementation in Bhutan.
- 2012:** Bhutan ratified the Nagoya Protocol
- 2015:** An interim ABS Policy was adopted. The policy addresses the research and commercial utilisation of Bhutan's genetic resources, their derivatives and ATK. The national policy establishes PIC and MAT as mandatory requirements for an ABS agreement. On 20th June 2017, this policy was adopted as the ABS Policy of Bhutan, 2015.
- 2018:** The Access and Benefit-Sharing Toolkit was issued summarising all policies, regulations and procedures.

The Biodiversity Act of Bhutan was revised and is currently awaiting the parliamentary process. Parties interested in genetic resources need to apply for a permit at the Ministry of Agriculture and Forests. The ABS agreement is formalised through the granting of a permit.

Lessons learned

NATIONAL ABS FRAMEWORK

- Bhutan's comprehensive approach including both protecting its natural treasures and encouraging research for the valorisation of its resources is constructive.

ELEMENTS THAT SUPPORT THE PROCESS

- Clear procedures and responsibilities are enabling factors for implementation. Experience since the adoption of the Biodiversity Act in 2003, including the adoption of the Nagoya Protocol, triggered the need for a comprehensive access and benefit-sharing policy to guide the implementation of ABS.
- ABS benefited from the additional technical assistance provided by development co-operation. Successful ABS implementation needs capacity, human resources and clear, transparent regulations to benefit communities and private sector alike.
- Given the complexity of ABS implementation, capacity-building in the form of equipment, human resource development and awareness-raising is essential. Special attention to capacity needs of local resource providers is necessary to facilitate their understanding of the process and implications of the negotiations.
- Participatory approaches including the development of community by-laws and protocols help to manage the expectations of local communities with respect to potential benefits.

Contribution to the Sustainable Development Goals (SDGs)



SDG 1, target 1.1: The benefits shared contributed to the livelihood of the community as households gained additional income due to the agreement. As agreed during negotiations, the project adds three sources of income to the budget of the households allowing them to diversify and build resilience.



SDG 15, targets 15.1, 15.6, 15.a: The case contributed to conservation by discouraging the collection of orchids from the wild, built capacity for operating propagating houses and secured further funds for the Bhutan Access and Benefit Sharing (BABS) Fund.

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The development of cosmetic products based on Amazonian biodiversity

Latin America



Natura cosmetics using Andiroba oil
© Natura

OVERVIEW

Long term partnership with extractive communities of the Amazon for the development of cosmetic products

SUBJECT MATTER

Astrocaryum murumuru (Murumuru) and *Carapa guianensis* (Andiroba)

COMMERCIAL USE

Development of cosmetic products using Andiroba oil and Murumuru butter.

PROVIDER COUNTRY

Brazil (Non-Party to the Nagoya Protocol)

DESCRIPTION OF THE CASE

Natura Ekos is a range of body care and perfumery products that showcases Brazilian biodiversity. In this context, Natura Cosmetics has established partnerships with local communities in the Amazon for the development and sourcing of cosmetic ingredients. These local communities are smallholders and “extractive communities” (see Box).

From the Medio Jurua region of the Amazon, Natura Cosmetics sources Andiroba oil and Murumuru butter. Andiroba is a native tree to Brazil known for its emollient and restorative properties for skin, while Murumuru is a palm native to the Amazon and from its seed comes a butter rich in fatty acids and lauric acid, which makes it interesting for use as an emollient in products for dry skin and hair.

EXTRACTIVE COMMUNITIES IN THE AMAZON

In Brazil, an extractive reserve is a type of protected area where sustainable use by local communities is permitted (extractive communities). These areas are publicly owned, but access and use rights, including traditional extractive activities such as wild collection, fishing and hunting are granted to local communities, who also engage in subsistence agriculture and small-scale livestock raising.

Over a decade, Natura Cosmetics has worked with extractive communities in Media Jurua to establish sustainable supply chains for Andiroba oil and Murumuru butter. In these supply chains, Natura Cosmetics considers not only technical but also anthropological and social issues, to ensure a positive contribution to the wellbeing and livelihood of the communities.

Compliance with ABS requirements in Brazil has also been an important component in developing these supply chains, as further described below. In accordance with provisional measure 2186-16 of 2001 in effect at the time, it involved the prior informed consent of representatives of three local community organizations and the establishment of an ABS

agreement between those organizations, the Chico Mendes Institute for Biodiversity Conservation (ICMBIO), the management authority of the area where the resources were accessed, and Natura. Although the involvement of numerous actors contributed to a long process, it was considered a worthwhile investment as it is in line with Natura's broader sustainability vision and enabled the establishment of a robust ABS agreement in terms of mechanisms for benefit-sharing. Lessons learned from this experience have also usefully informed the establishment of additional supply chains in the region and strong partnerships with communities of the Amazon.

Key actors involved and their role

RESOURCE PROVIDER

- Extractive communities from the Media Jurua region of the Amazon, in particular the Association of farmers from Carauari (ASPROC), the Mixed Cooperative for Sustainable Development and Solidarity Economy of the Medio Jurua Extractive Reserve (CODAEMJ), and the Association of agroextractive communities of the Uacari Sustainable Development Reserve (AMARU). They are the providers of Andiroba oil and Murumuru butter to Natura.
- The Chico Mendes Institute for Biodiversity Conservation (ICMBIO) is an independent public body linked to the Ministry of Environment in Brazil. It is responsible for the management of protected areas which are part of the National System of Conservation Units, including the promotion of biodiversity conservation. As the management authority of the extractive reserves where the resources were accessed, it was also considered as the provider of the resources.

COMPETENT AUTHORITY

- The Genetic Heritage Management Council (CGEN) is the competent authority responsible for access and benefit-sharing in Brazil.

USER

- Natura Cosmetics is a Brazilian cosmetics company, now part of the Natura & Co Group. For its Natura Ekos line, it works with smallholders and extractive communities for the sustainable sourcing of raw materials used for cosmetic products. In 2018, Natura maintained a relationship with 37 communities which represent 5 664 families.

The ABS dimension

Natura started building a relationship with the extractive communities from Medio Jurua in 2003 and the first purchase of Murumuru butter and Andiroba oil occurred between 2004 and 2005. As it was early days in the implementation of provisional measure 2.186-16 of 2001, the relevance of ABS requirements to the sourcing of these ingredients was not straightforward. In 2005, Natura approached the government to find out whether ABS requirements would be applicable in an extractive reserve and to determine the most appropriate mechanism for the sharing of benefits in these circumstances.

In 2009, further to the elaboration of a value chain and management plans for Andiroba and Murumuru, prior informed consent (PIC) was obtained from the communities. In 2011, following several meetings and delays linked to changes in government representatives and institutions, mutually agreed terms (MAT) were reached between the three community organizations (ASPROC, CODAEMJ and AMARU), ICMBIO, as the management authority, and Natura. At the end of a long process, this access activity was regularized by CGEN (the competent national authority) in 2015, in accordance with the 2001 provisional measure.

Benefit-sharing was addressed in the MAT as further described below. Monetary benefits are linked to the revenues earned by the Natura products using Andiroba oil and Murumuru butter and are shared with communities through a fund that invests in projects for conservation, sustainable use and local livelihoods.

-
- **What benefits to share?** Following years of discussions to find the most appropriate way to measure benefits, Natura proposed the parameters which were being considered for the new Brazilian law on ABS (under discussion at the time). It was agreed that 0.75% of benefits from the revenue of products during the period they are commercialized would be targeted to conservation projects, paid every year.

For 2017, benefits in the amount of 789 859 BRL (approximately 133,899.42 Euro) were shared by Natura. These benefits supported projects involving four organizations, which represent 485 families from 42 communities. For 2018, benefits reached an amount of R\$ 989 946 BRL (167,602.82 Euro) and benefited nine organizations.

- **How to share benefits?** A key element of the MAT was the creation of the Medio Jurua Fund. The Fund enabled an approach to the sharing of benefits that is transparent, managed jointly by all the stakeholders and ensures a positive contribution through socio-environmental projects that could reach the whole community.

The Fund is managed by an executive secretary and a committee composed of representatives from Natura, ICMBio as well as the three community organizations. The executive secretary is responsible for the administrative management of the committee as well as management and monitoring of project implementation.

A call for projects is published by the committee in order to identify projects proposed by communities from the Media Jurua region that are best suited to receive financial resources through the fund. Once a project is approved, the management committee informs Natura who transfers the budget approved to the organization responsible for the selected project.

Through the projects selected, the fund has supported a number of activities related to conservation and sustainable use and contributed to the improvement of the livelihood of the communities involved, including:

- Conservation of forest areas, as well as endangered turtles and the pirarucu fish.
- Capacity-building through environmental education activities (e.g. species conservation programmes targeting the youth) and management trainings
- Improvements to local infrastructure (e.g. establishment of three community shops for easier access to items such as food, fishing material and fuel at a more affordable price).
- Empowerment of local people (e.g. participation of community representatives in general assemblies and participation in decision-making)
- Enhancement of the supply chains (e.g. increased production yield, improvement in quality of Andiroba oil)

THE ABS LEGAL FRAMEWORK IN BRAZIL

2001: Provisional measure 2186-16 was in force at the time of this case.

2015: Taking into account experience acquired over the years with ABS implementation, the provisional measure was replaced by Law n. 13,123 which sets out the general framework for access and benefit-sharing.

2016: Decree n. 8,772 providing further details regarding ABS implementation.

Lessons learned

BENEFIT-SHARING

Key lessons learned from this case include the establishment of a fund to ensure transparency and positive impact of benefits in the communities. Points to highlight in this approach include:

- Representation of the communities, Natura and ICMBIO on the management committee contributes to good governance and ensures that the interests of all are taken into account in decision-making and the selection of the projects to receive funding.
- The benefit-sharing mechanism established by the fund which involves the call for projects from local community organisations from the region and the selection of projects by the management committee involves a fair distribution of the funds available and has contributed to strengthen local organization throughout the region.
- The fund has contributed to local development through the improvement of value chains (Andiroba and Murumuru supply chain, as well as others supply chains such as pirarucu), increase in social participation through capacitation workshops, improved management through meetings of organization leaders and projects focused on training young leaders and activities for species conservation.

ABSENCE OF INTERMEDIARIES

The absence of intermediaries between Natura and the communities enabled the establishment of a direct and transparent relationship with community organisations. This unique relationship developed over time has contributed to establishing strong ties based on trust between Natura and its suppliers, which have been mutually beneficial, in line with Natura's sustainability strategy.

POSITIVE CONTRIBUTION OF PARALLEL COMPLEMENTARY INITIATIVES

Through the establishment of supply chains, local communities were empowered thanks to a number of parallel initiatives:

- Capacity-building through trainings on a variety of issues, including health and safety, management, nature conservation
- Enhancement of supply chains through technology transfer, improvements in quality contributing to increased value of the products supplied.

LEARNING BY DOING

Although it was a lengthy process, it enabled the establishment of a solid relationship and a strong foundation for the ongoing partnership between Natura and communities in the Amazon which has now expanded to a number of supply chains in line with Natura's broader sustainability vision.

Contribution to the Sustainable Development Goals (SDGs)



SDG 1, target 1.4: Several initiatives established through support provided by the Media Jurua Benefit-sharing Fund have contributed to the increase of family incomes.



SDG 5, target 5.a: Some of the projects funded and the community organisations from the region focus on reinforcing the important role that women play in society and hence contribute to gender equity.



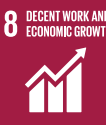
SDG 15, targets 15.2, 15.5, 15.9: Maintenance of a sustainable extractive supply chain and enhancement of the effectiveness of processes contribute to forest preservation. The interest and involvement of young people in environmental projects also contributes to the achievement of this SDG. The establishment of these supply chains also demonstrates how biodiversity values can be taken into account in local planning and development processes.



SDG 10, target 10.2: The promotion of social organisation directly contributes to empower and promote the social and economic inclusion of all, irrespective of ethnicity, origin, economic or other status.



SDG 4, target 4.4: Projects supported by Natura contribute to educating young people about sustainable use of the natural resources in their region contributing to employment and sustainable development.



SDG 8, target 8.3: As demonstrated above, the Fund supports the livelihoods of the communities through job creation, entrepreneurship based on sustainable harvesting of natural resources.



Murumuru Fruit *Virola surinamensis* Myristicaceae
© Natura

Relevant contacts/sources of information:

- Direct communication with Natura
- Impact Case Study: Natura's Commitment to Ethical BioTrade
- Natura 2018 Annual Report.
- Natura 2050 Sustainability Vision
- Natura & Co 2030 Sustainability Vision

The development of cosmetic products based on the Uchuva calix from Colombia

Latin America



The Uchuva fruit and its calix © Pexels

OVERVIEW

An ABS agreement for the development of a cosmetics ingredient based on the active properties of the Uchuva calix

SUBJECT MATTER

Physalis peruviana (Uchuva), a tropical fruit

COMMERCIAL USE

Development of a cosmetic ingredient for commercial use following research and development on the active properties of the Uchuva calix

PROVIDER COUNTRY

Colombia (Non-Party to the Nagoya Protocol)

DESCRIPTION OF THE CASE

Cosmo International Fragrances, Natural Ingredients Division, (formerly Cosmo International Ingredients) specializes in the development of natural ingredients for the cosmetics and fragrance industry. It carries out research and development (R&D) on raw materials from biodiversity for the development of natural innovative ingredients for perfumes and cosmetics based on the latest technologies.

In the context of its search for new ingredients, Cosmo initiated bibliographic research on uchuva (*Physalis peruviana*) in 2012. It then purchased the Uchuva calyx from OCATI, a Colombian fruit supplier, in 2014, to carry out research on its active properties.

The Uchuva fruit is used for consumption in food products and there is a large demand for it in the United States of America and Europe. The Uchuva calix however is a by-product which is usually discarded by suppliers of Uchuva as there is little demand for it. Following research and development on the active properties of the Uchuva calix, Cosmo developed a potent natural ingredient from its extract, thereby valorizing a by-product. This new ingredient was then used by Cosmo's exclusive customer - a popular cosmetics brand in Latin-America, to develop an anti-ageing cream and eye contour cream.

Key actors involved and their role

RESOURCE PROVIDER

- OCATI, local supplier in Colombia: OCATI is one of Colombia's leading tropical fresh fruit exporters. It exports fruit to wholesalers, supermarkets, and fresh fruit stores in many regions, including Europe and the United States. OCATI is committed to protecting the environment through sustainable agricultural practices and also respects social responsibility standards. In this case, OCATI exports the Uchuva calix to Cosmo. It also provides logistical support by contacting the farmers that benefit from the actions negotiated through the ABS contract and by organizing annual training sessions for the farmers.

COMPETENT AUTHORITY

- The Ministry of Environment and Sustainable Development of Colombia is the competent national authority for ABS in Colombia. Various departments from this Ministry were involved in the negotiation and signature of the access and benefit-sharing contract, including the Group dealing with genetic resources “Grupo de Recursos geneticos” and the Office of green businesses “Oficina de Negocios Verdes”.

NATIONAL COLLABORATOR

- Universidad Agraria de Colombia: The agricultural university of Colombia was selected as the national institute that would support the process (instituto nacional de apoyo), including the negotiation of the contract as well as follow-up and control of the activities and reporting back to the government.

USER

- Cosmo International Fragrances, Natural Ingredients Division (Cosmo): A privately-owned company based in the South of France with laboratories in Peru and Colombia. Thanks to the expertise of its team, it develops natural ingredients based on ethical supply chains. Cosmo is a UEBT member. It is committed to respecting nature, ethical sourcing, regulatory compliance and also works closely with local communities and partners around the globe to seek long term fair partnerships.

The ABS dimension

Uchuva is a species native to Colombia as well as other countries in the region and as such access and utilization of uchuva is within the scope of ABS requirements in Colombia, established through the Andean Decision 391 and its implementing decrees and resolutions (see box below for further details). Following the entry into force of the Nagoya Protocol, Colombia adopted Law 1753 in June 2015 which addressed, among other issues, the regularization of access to genetic resources. Article 252 of this law enabled users (national or foreigners) of genetic resources, which had or were carrying out research on genetic resources acquired in Colombia for scientific or commercial purposes without the authorization of the Ministry of Environment and Sustainable Development, to request an access contract within a two-year period from its entry into force. On this basis of this transitional measure, a few months later, on 22 December 2015, Cosmo requested a contract for access to uchuva (*Physalis peruviana*) in line with ABS requirements in Colombia. In July 2016, a resolution accepted the request for an access contract and the negotiation of a contract was initiated with the competent national authority. In March 2017, the negotiation was completed, the contract signed and a commercialization permit was granted to Cosmo. Cosmo was the first foreign company to obtain a contract for access to genetic resources in Colombia.

A contract was signed by Cosmo and representatives from the Ministry of the Environment and Sustainable Development as the competent national authority for a period of 10 years, as agreed by both parties. The negotiation of benefits also involved the “Universidad Agraria de Colombia” which provided scientific endorsement and advice on non-monetary benefits. In addition, OCATI, the supplier, is mentioned in the contract and actively involved in its execution, in particular in the activities related to the sharing of benefits with the farmers who collect the raw material.

The contract provides for the sharing of monetary and non-monetary benefits. **Monetary benefits** include the following:

- As usually requested, a lump-sum payment of approximately 60USD per species investigated, in this case “*Physalis peruviana*”.
- An initial payment paid at the moment of the signature, which takes into account the other negotiated terms, in particular the estimated value of the non-monetary benefits.
- During the 10 years of the contract, an annual payment is made corresponding to a negotiated percentage of the net margin (total sales of ingredient – raw material purchase – production costs – administrative costs – taxes) earned the previous year.

In order to raise awareness to ABS and support stakeholders along the supply chain, the sharing of **non-monetary benefits** involves the following activities to be carried out by Cosmo:

- Presentation of the results of the research, in the form of a seminar or international congress focused on the subject of the project with a view to take advantage of the project to raise awareness about ABS at national level
- Publication of an article in a scientific journal, presenting the results of the research
- Annual workshops with a minimum of 30 farmers, who supply OCATI with Uchuva, for training on subjects related to the sustainable use of biodiversity and green businesses.
- Support to two green business projects initiated by farmers who supply OCATI, by financing the alignment with green businesses assessment criteria established by the Office of green businesses (Oficina de Negocios Verdes).

It is not unusual in the cosmetics sector to develop an active ingredient for an exclusive customer, as Cosmo did in this particular case. By limiting volumes to the purchases of a single customer, the direct and indirect costs of ABS can be onerous for the manufacturer and it is important to keep this in mind when a customer requests exclusivity. Similarly, the negotiation of the ABS contract must take account of this reality, which necessarily implies lower profits to be shared and greater unpredictability of sales volumes.



Uchuva plantation
© Cosmo International Fragrances, Natural Ingredients Division

THE ABS LEGAL FRAMEWORK IN COLOMBIA

- 1996:** Andean Decision 391
- 1997:** Resolution 620 establishing the ABS procedure
- 2014:** Decree 1348 on activities that constitute access
- 2015:** Law 1753, article 252 on contracts for access to genetic resources and their derivatives
- 2017:** Resolution 1352 modifying Resolution 1348

Lessons learned

NATIONAL ABS MEASURES

- The establishment of transitional measures which enable users to regularize access to genetic resources in accordance with newly established ABS requirements can facilitate ABS implementation and contribute to the establishment of a climate of trust between users and providers.
- Although it was not relevant in this particular case, it was pointed out that the Colombian approach which enables the granting of research permits for bioprospecting of new plants in specific areas over a specific period of time is more practical from a user perspective than having to request access for each individual plant accessed for bioprospecting purposes.

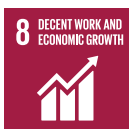
BENEFIT-SHARING

- Agreeing on the fair and equitable sharing of benefits at the outset can be a challenge. To ensure equity for both the user and the provider of genetic resources, it would be useful to plan to review benefit-sharing terms one or two years into the implementation of the contract once there is greater visibility with respect to the sales and turnover of the product developed using the genetic resources. If sales and turnover exceed the initial amount expected, the sharing of benefits could be increased, or conversely decreased if the benefits are lower than expected.
- It is important for users to have clarity on how benefits flow back to biodiversity conservation and sustainable use: Users of genetic resources who are committed to sustainable practices would appreciate receiving further information regarding the use of the monetary benefits shared and having the opportunity to choose the type of projects supported thanks to the benefits shared. They are interested in knowing that the benefits they share contribute to conservation and sustainable use.

ELEMENTS THAT FACILITATE THE PROCESS AND THE CONCLUSION OF AN ABS AGREEMENT

- Having a local person involved in the process and dealing with national authorities can contribute to a better understanding of the process and to successful partnerships
- The credibility of the user as a company seeking to value nature can contribute to establishing a climate of trust between the user and the provider.

Contribution to the Sustainable Development Goals (SDGs)



SDG 8, target 8.3: Non-monetary benefits contribute not only to sustainable use but also to economic and social development, through trainings on sustainable use and support provided to green business projects.



SDG 12, targets 12.2, 12.6: This partnership contributes to sustainable management and efficient use of natural resources. It also illustrates how transnational companies can contribute to sustainable practices through ABS partnerships.



SDG 15, target 15.6: Although Colombia has not yet ratified the Nagoya Protocol, this case illustrates the approach taken by Colombia in implementing ABS measures and negotiating ABS agreements following the entry into force of the Nagoya Protocol.



SDG 17, targets 17.6, 17.16: A multi-stakeholder ABS partnership can contribute to sustainable development through the sharing of knowledge, expertise, technology and financial resources.

Relevant contacts/sources of information:

- Communications with Cosmo International Ingredients
- “Cosmo’s experience of ABS process in Colombia – example of the uchuva extract”, presentation by Cosmo International Fragrances, Natural Ingredients Division (then Cosmo International Ingredients), UEBT Conference, May 2019.
- “Estudio de caso contrato de acceso a recursos geneticos y sus productos derivados RGE0168” presentation by Ministry of Environment of Colombia, Regional UNDP workshop for Latin America and the Caribbean on the negotiation of ABS contracts, Punta Cana, 2019.

Analysis of findings

Access and benefit-sharing (ABS) has been described as a "paradigm shift" in the way research and other work on biodiversity is undertaken. Indeed, as many of the cases in the project show, ABS implementation has required a shift in mindset and practices. In a number of cases, the development of a partnership between users and providers was a lengthy process. In many countries, ABS implementation was at its early stages, actors involved had limited if any experience with ABS implementation and did not know what to expect from their partners or what would likely be an acceptable outcome for all. The process they had to follow, although sometimes complex and time consuming, enabled them to build strong partnerships which provide a sound basis for future collaborations, to develop good practices and perhaps the establishment of future ABS arrangements in a more expedient and effective manner.

The following provides an overview of the main lessons learned, including good practices identified, and key contributions to the UN Sustainable Development Goals (SDGs) based on the cases covered by this project.

LESSONS LEARNED

The development of ABS legal and policy frameworks

From the cases analysed in the project, it is clear that how national ABS frameworks are developed has significant implications for their successful implementation:

- Recognition of the value of biological diversity and associated traditional knowledge through a policy or strategy at national or sub-national level can provide a conducive environment for successful ABS implementation. In light of national circumstances, this may involve the recognition of the importance of traditional knowledge and the role of communities in contributing to conservation and sustainable use.
- A lengthy ABS process is often due to complex procedures and to national circumstances, such as political and social problems, or to challenges in communication between various actors (and sometimes sectors) involved. The time involved in navigating ABS rules and related costs is often difficult to reconcile with commercial pressures in particular when companies need to request ABS permits for multiple ingredients which may be involved in the development of a product.
- It is important to involve indigenous peoples and local communities as well as relevant stakeholders, including the private sector and the scientific community, in the development of ABS measures so that the needs of both providers and users can be taken into account.
- It is widely recognised that the implementation of clear, simple and transparent national ABS procedures and requirements make access attractive and contribute to legal certainty and successful ABS implementation.
- Competent national authorities can play an important role in navigating ABS procedures and in providing clear guidance with respect to the scope of application of ABS requirements.
- The establishment of transitional measures which enable users to regularise access to genetic resources in accordance with newly established ABS requirements and their transparent communication can facilitate ABS implementation and contribute to a climate of trust between users and providers.
- From a user perspective, a national system which enables granting of research permits for bioprospecting of new genetic resources in specific areas over a specific period of time is considered more practical and in line with business practices than having to request access for each individual resource accessed for bioprospecting purposes.
- An online application process, including the possibility to check the status of access applications and ABS agreements, can facilitate communications and information exchange on both sides and could limit delays in processing.
- Simplified processes and standardised procedures for academic research can facilitate access for scientific purposes.
- Specific requirements in national ABS measures can also ensure that benefit-sharing contributes to biodiversity conservation.
- Capacity-building projects, through technical and financial assistance, can usefully support the process leading to the development of national ABS frameworks and the establishment of sound ABS agreements.

The role of voluntary tools and other supportive mechanisms

A number of tools or supportive mechanisms can support actors in setting up and taking forth successful partnerships on ABS.

The usefulness of voluntary tools developed by users, such as guidelines and codes of conduct, is demonstrated in a number of cases:

- They provide useful guidance to users interested in seeking access to genetic resources and have been particularly useful in promoting respect of ABS principles in the absence of ABS measures in provider countries.
- They also contribute to building a climate of trust between users and providers of genetic resources by demonstrating the commitment of users towards ABS principles. A number of cases included in this project benefited from policies, guidelines or codes of conduct developed by groups of users or institutions from the scientific community. (e.g. Consortium of European Taxonomic Facilities (CETAF) code of conduct, Royal Botanical Gardens Kew policies and guidelines, German Research Foundation (DFG) guidelines).

Community protocols can be useful in the establishment of clear procedures to follow with indigenous peoples and local communities when national measures require the direct involvement of communities for obtaining prior informed consent (PIC) and establishing mutually agreed terms (MAT) for access to genetic resources or associated traditional knowledge.

A local intermediary or neutral facilitator can be helpful in understanding the national context, navigating ABS rules and facilitating the process between the different actors who may be involved in a partnership. This may also include support with practical aspects such as translating documents into local languages or submitting requested application documents to the relevant authorities. In some cases, however, users may prefer to establish direct contact and avoid intermediaries.

Some cases also demonstrate the need for flexibility in developing approaches which are suited to particular circumstances. For example, some cases illustrate how successful partnerships were developed between multiple actors, through a series of agreements, which could not have been achieved through a single agreement between two parties.

The ongoing need for awareness-raising of various actors involved in ABS implementation is also highlighted in many cases.

The importance of trust between users and providers

The importance of establishing trust between users and providers for successful ABS implementation is illustrated in many of the cases covered.

ABS arrangements often involve multiple actors along the value chain, which may include government representatives, communities, research institutions and companies.

Communication and dialogue between the actors involved are of key importance in establishing this trust and can contribute to the establishment of long-term partnerships.

Long-term partnerships involving various actors along the value chain can also contribute to the valorisation of biological resources and traditional knowledge.

The importance of non-monetary benefits to conservation, sustainable use, livelihood of communities and the building of national research capacity

A number of cases demonstrate that benefit-sharing can contribute to conservation and sustainable use of biological diversity and to the livelihoods of communities. It can also contribute to building the capacity of local scientists and to establishing a research infrastructure in provider countries:

- In particular, non-monetary benefits, such as capacity-building and training of communities, has contributed to raising awareness of the value of biological resources and the importance of conservation and sustainable use, and to increasing knowledge with respect to good practices, such as sustainable harvesting techniques.
- Benefit-sharing has also contributed to the livelihood of communities through the development of new skills in the communities and job creation.
- It can also contribute to building research capacity through the sharing of know-how and research results, as well as training and employment of local scientists and technicians and the establishment of infrastructures.

The importance for users to have clarity on how benefits flow back to biodiversity conservation and sustainable use has also been pointed out.

Practical approaches to benefit-sharing

With respect to benefit-sharing mechanisms, in some cases up-front payments have been considered useful to initiate research projects as they provide legal certainty to users and enable to move swiftly with research activities. Strict requirements can be established for further authorisations and benefit-sharing if commercialisation is to take place.

In response to the challenge of establishing fair and equitable benefit-sharing terms which are proportional to profits at the outset, it has been suggested to review these terms at a time to be determined into the implementation of the contract once greater visibility is achieved with respect to sales and turnover of the product using the genetic resources.

The absence of pre-established parameters for benefit-sharing provides flexibility but can also contribute to lengthy and complex negotiations when a number of actors are involved.

The establishment of a benefit-sharing fund can be a useful mechanism for the involvement of providers in decision-making regarding the use and distribution of funds, in particular in cases where multiple communities are involved.

GOOD PRACTICES

Based on the experiences and lessons gathered above, some good ABS practices which can contribute to successful ABS partnerships have been identified:

ABS legal and policy framework

The development of a national policy/strategy for the valorisation of biodiversity and traditional knowledge and the development of national research capacities.

Consideration of elements that can contribute to the development of clear, simple and transparent ABS measures that provide legal certainty and limit transaction costs:

- Involvement of relevant stakeholders, including the private sector and the scientific community, in the development of ABS measures
- The establishment of transitional measures which provide for the regularisation of activities related to access and benefit-sharing
- The granting of research permits for bioprospecting rather than individual permits for each individual access
- An online application process to facilitate communications, information exchange and limit delays in processing.
- Simplified processes and standardised procedures for academic research

Supportive mechanisms

The involvement of intermediaries or facilitators to support the process when the user is not based in the provider country and has limited understanding of the national context and ABS requirements.

The application of voluntary tools developed by groups of users or institutions, such as guidelines and codes of conduct, to help ensure that users respect ABS principles and share benefits and to contribute to building a climate of trust between providers and users of genetic resources and associated traditional knowledge.

The development of community protocols for the establishment of clear ABS procedures when accessing genetic resources over which indigenous peoples or local communities have established rights or when accessing associated traditional knowledge.

Investing time in communication and dialogue amongst relevant actors, in particular with indigenous peoples and local communities involved in ABS arrangements, to enable the establishment of long-term partnerships based on trust.

Raising-awareness to access and benefit-sharing amongst both users and providers of genetic resources continues to play an important role in managing expectations and successful ABS implementation.

Practical approaches to benefit-sharing

The inclusion of non-monetary benefits in ABS arrangements including the sharing of know-how, technology transfer and capacity-building with a view to contribute to conservation, sustainable use, the development of national research capacities and the livelihoods of communities.

To provide clarity to users on the use of benefits and how they flow back to conservation and sustainable use and consider involving users in the choice of projects supported thanks to the benefits shared.

To review benefit-sharing terms at a time to be determined in the ABS contract once profits related to sales and turnover of the product based on genetic resources become clearer.

The establishment of a benefit-sharing fund as a mechanism for the sharing of benefits with provider communities to enable the participation of provider communities in the decision-making process regarding the use and distribution of funds.

These good practices are drawn from the cases covered by this project. They should not be considered as an exhaustive set of good practices to follow but rather aim to point to some lessons learned based on existing experiences which may provide useful considerations in future ABS implementation.

Contribution to the Sustainable Development Goals (SDGs)

The cases covered by this project also demonstrate that ABS arrangements contribute to many SDGs, in a direct or indirect manner, as illustrated below.

SDG 1: As demonstrated by lessons learned above, ABS partnerships which involve indigenous peoples or local communities as providers of genetic resources and/or associated traditional knowledge generally contribute to improving the livelihoods of these communities, by generating income, contributing to the development of new skills and to economic and social development more generally.

SDG 8: ABS partnerships can contribute to sustainable economic growth and decent work for all. Benefit-sharing through training, capacity-building and knowledge transfer has contributed to new employment opportunities for communities, to job creation for scientists and technicians in the field of biodiversity research and to economic and social development through green business projects.

SDG 9: ABS partnerships can contribute to the development of national scientific research and innovation capacities and infrastructure domestically, through both monetary and non-monetary benefits. Non-monetary benefits have included training and collaboration with local scientists, education and training in laboratory techniques, technology transfer and processing capacity at local level, the sharing of knowledge and results of research.

SDG 15: ABS partnerships have contributed directly to SDG 15 in a variety of ways. The cases have all demonstrated that ABS arrangements have contributed to the fair and equitable sharing of benefits arising from the utilization of genetic resources through appropriate access to such resources. A number of cases have also contributed to biodiversity conservation, for example by raising awareness about biodiversity and through capacity-building on the sustainable use and management of forests.

SDG 17: Many of the cases covered have contributed to a global partnership for sustainable development by enhancing North-South and in some cases South-South cooperation. A number of cases have shown that ABS partnerships can involve a number of actors, including representatives from communities, government, local institutions (e.g. universities, research institutions) and companies as well as multinational companies sometimes across multiple countries. As demonstrated above, these multi-stakeholder partnerships have contributed to knowledge-sharing, access to science, technology, innovation, capacity-building and have also contributed to local efforts to valorise biodiversity as well as to conservation and sustainable development.

In addition, due to particular circumstances, actors involved or the specific purpose of the project, some cases have also contributed to additional SDGs, as follows:

Some cases have contributed to **SDG 2** by limiting food insecurity. Others have contributed to **SDG 3** by advancing medical research.

A number of projects have also contributed to **SDG 4** and the promotion of quality education by building expertise, including through trainings, capacity-building, sharing of knowledge and collaboration with communities and local scientists.

A few projects also supported **SDG 5** and gender equality through capacity-building efforts benefiting women, through the creation of jobs, scientific skills or improvement of their livelihoods.

Some cases also contributed to **SDG 12** on sustainable consumption and production patterns by supporting sustainable management and efficient use of natural resources.