POLICY BRIEF

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ABS Measures in Central Africa: Exploring the implications of scope

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Voices for BioJustice
Working towards the equitable and sustainable use of biodiversity

Samples for drug development, a raw plant ingredient used in a cosmetic product, herbal teas, or microorganisms that contribute to biotechnology industrial processing and manufacturing … do all fall under ABS? How about a product that is based on traditional knowledge (TK) that is common and widespread? Digital sequence information (DSI) derived from biodiversity? Where do we draw the line around what ABS regulates - what is in and what is out?

What is the "scope" of ABS?

Scope means quite simply *what is covered by ABS frameworks*. This means the activities, actions and circumstances that are included under specific ABS legal and regulatory rules and principles and the subject matter or phenomenon to which they apply.

Clear scope is essential to:

- dissipate legal and practical uncertainties
- facilitate R&D, the precursor to both monetary and non-monetary benefit sharing
- facilitate effective implementation of ABS measures
- identify institutional responsibilities and capacity needs for implementation
- dissipate suspicions and confusion
- facilitate permitting and benefit sharing

ABS Scope under the Convention on Biological Diversity

"Access to genetic resources and the fair and equitable sharing of benefits" (ABS) emerged from the Convention on Biological Diversity (CBD) process in 1992 , and was further elaborated in the 2014 *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation*. The objectives of the CBD framed ABS as ***"… the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding."***

As the **Objectives** (Article 1) and **Use of Terms** (Article 2) make clear, the original focus of ABS was very much on biotechnology and biodiscovery in high tech sectors like the pharmaceutical industry. At this time, some industry R&D programs collected samples of plants, insects, microorganisms, marine organisms, and other natural products, and screened these in a laboratory, usually located far from the site of collection. Collections were mainly undertaken by intermediary research institutions like botanic gardens and universities, and companies.

Article 2. Convention on Biological Diversity, Use of Terms

- **"Biological resources"** includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

  "Biotechnology" means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.

- **"Genetic material"** means any material of plant, animal, microbial or other origin containing functional units of heredity.

  "Genetic resources" means genetic material of actual or potential value.

- **"Technology"** includes biotechnology.

Article 2. Nagoya Protocol, Use of Terms (building on those of the CBD)

- **"Utilisation of genetic resources"** means to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology as defined in Article 2 of the Convention;
- **"Derivative"** means a naturally occurring biochemical compound resulting from the genetic expression or metabolism of biological or genetic resources, even if it does not contain functional units of heredity.

The use and demand for access to genetic resources: dramatic change over 30 years

In recent decades, approaches to commercial R&D that involve large-scale collecting programs - including natural products drug discovery - were reduced in size, as high technology sectors increasingly focused on genomics driven approaches. Today, physical material collections like those of the 1980s and 1990s that used taxonomic, ethnobotanical, and random strategies still occur, but are far fewer in number, and the samples have shrunk in size from kilograms to milligrams or less. High tech sectors didn't lose interest in genetic and biological diversity, but what they accessed and used changed. Many research programs access physical material through existing collections or collect in their home countries. The genetic material of microorganisms, including those from marine organisms, is of particular interest as improved techniques allow access to previously unavailable microbial diversity. Most researchers are interested in the genetic data, or information, contained in physical materials and increasingly physical samples are not shared and instead genetic material is transmitted digitally.

In the not too distant future, a combination of advances in *reading*, or sequencing DNA - including portable and low-cost sequencers - mean that individuals could easily, and relatively cheaply, sequence genes from physical material anywhere in the world, and immediately send it via the internet to researchers, databases, foundries, and other institutions in regions far from the site

of collection. At the other end of the process, the *writing* of DNA, advances in automation are making it simpler and cheaper to synthesise DNA in the laboratory.

Although large-scale collecting programs for industry are less common, academic researchers have launched citizen science collecting programs around the world to expand our understanding of biodiversity. These collections are undertaken at a scale and across a geographic range previously not possible. Samples are sequenced, and data and information entered into public, and widely accessible, databases.

The divergence between research intensive "high" technology industries and "lower" technology users of genetic resources is growing. This is due in part to the rapid transformations in science and technology that pull research-intensive industries into ever-higher technologies. At the same time, consumer demand for natural, sustainable, organic and fair trade products has pulled cosmetic, food and beverage, and botanical companies towards traditional knowledge and raw material-based approaches. Some companies in these latter sectors also undertake screening and high tech research, but they also continue to source raw materials for manufacturing ingredients and products, as part of what is termed "biotrade". Biotrade and biodiscovery involve different companies and approaches to R&D, demand for access, and use of genetic resources. These differences have significant implications for ABS.

WHAT IS BIOTRADE?

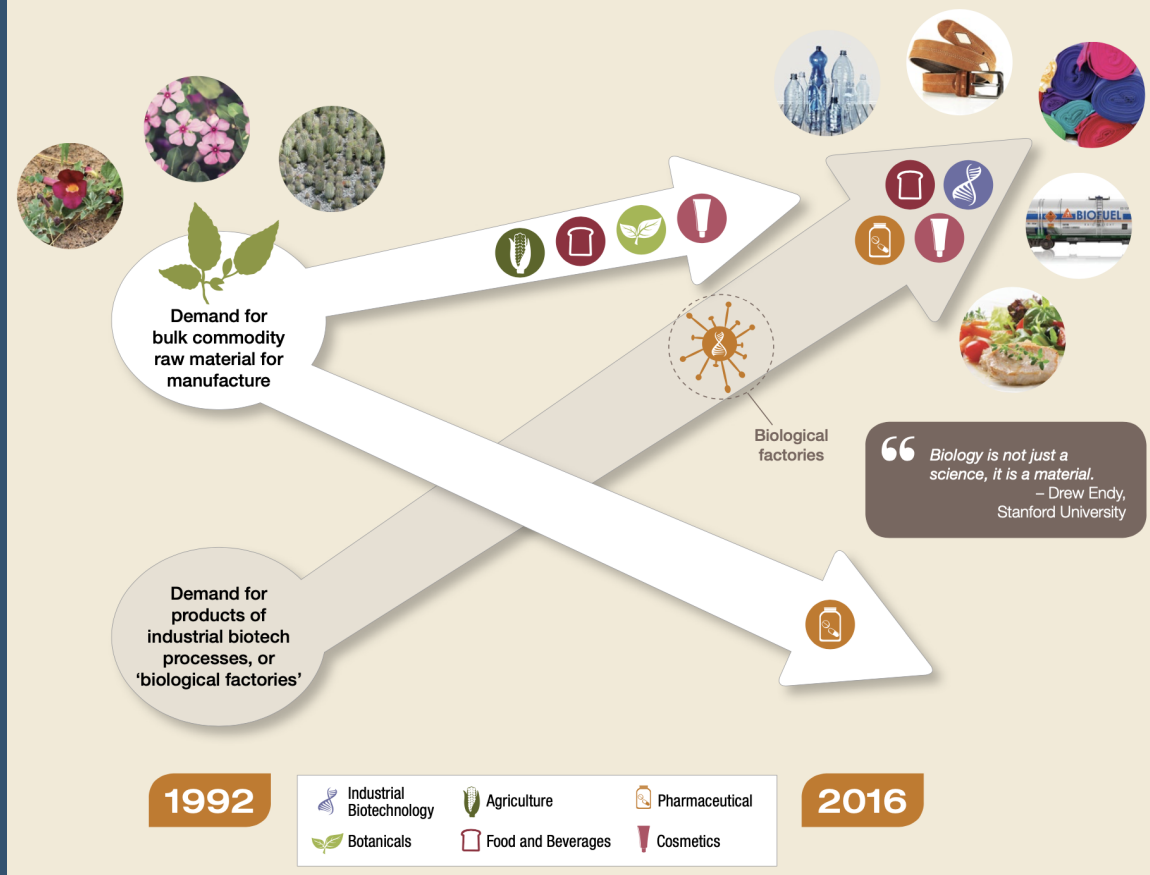
The commercial collection, processing and trade in bulk material and products derived from biodiversity, for the cosmetic and personal care, nutraceutical, food and beverage, botanical medicine and other sectors relying on the sourcing of raw materials. Biotrade often makes use of traditional knowledge in product and ingredient development and in marketing.

WHAT IS BIODISCOVERY?

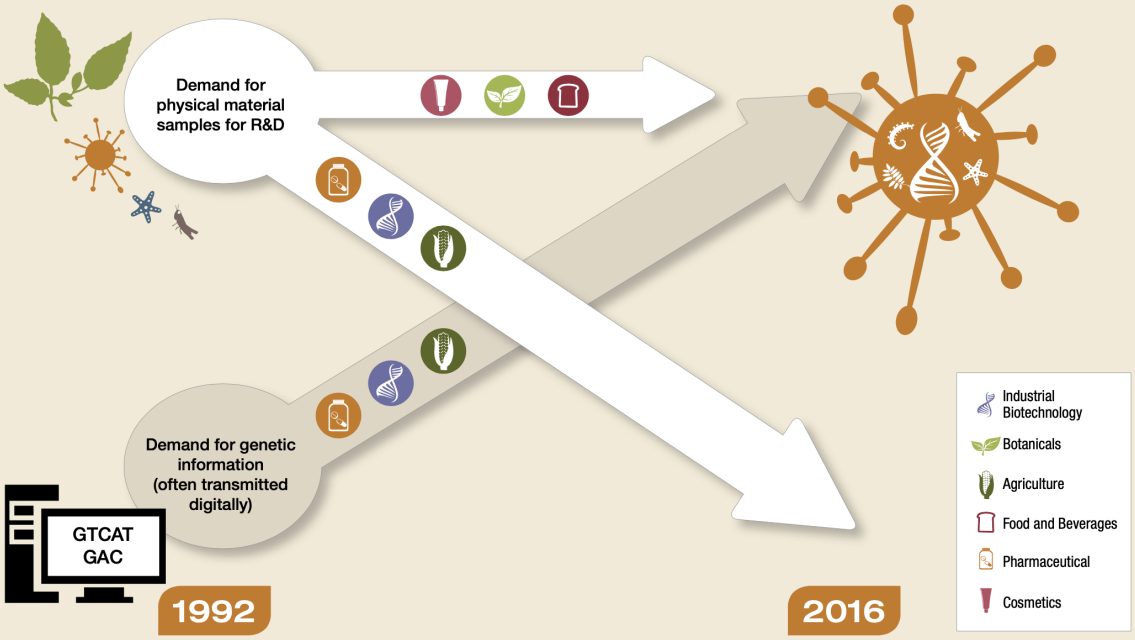
The collection of and research on samples of biological resources in order to discover genetic information or compounds of value. This includes the pharmaceutical, biotechnology and agriculture sectors. Biodiscovery involves extensive use of digital sequence information.

The use of "**digital sequence information**" – or genetic sequence data – increasingly permeates nearly every branch of the life sciences and modern biology today, allowing for computational analyses and simulations that are significantly cheaper and quicker than biological experiments run in a wet laboratory. It contributes to understanding the molecular basis of phenotype, evolution, and manipulation of genes to provide new therapies and cures for disease, industrial products, renewable energy sources, chemicals, and other products and solutions

Trends in demand for access to biological resources for product manufacture



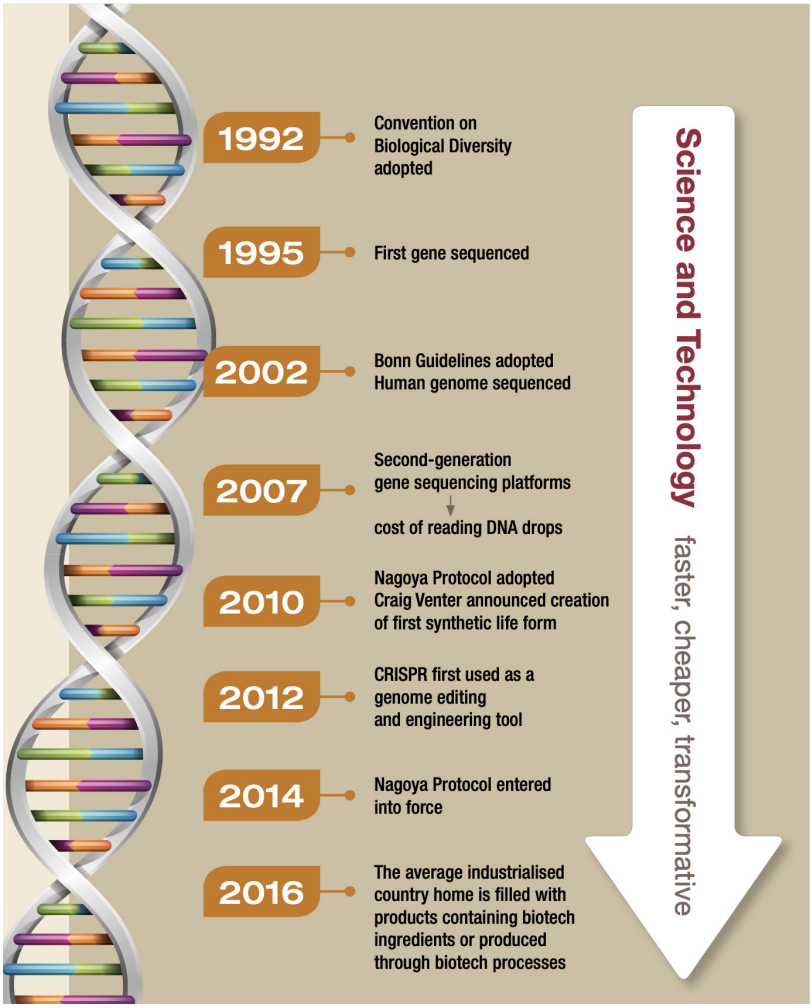
Trends in demand for access to genetic resources for R&D



Source: Laird and Wynberg, 2017

How has the scope of ABS policy and law addressed these changes?

As the cost of reading DNA dropped, and genomics and bioinformatics approaches to R&D continued to expand in the 2000s, the Nagoya Protocol was under development. Rather than shifting to accommodate the explosion of demand for genetic information, however, governments moved in the opposite direction. The Nagoya Protocol focused on the collection and exchange of physical material and did not address the increasing use of genetic sequence data in advanced research.



Source: Laird and Wynberg, 2017

In some countries, governments have taken the Nagoya Protocol lead and focused on physical, tangible exchanges of material in their ABS laws. ABS agreements today are often associated with biotrade, and less common biodiscovery. Access to genetic diversity for biodiscovery today is primarily through databases, or existing collections, and rarely involves ABS Agreements. The scope of ABS is again in flux, however, as Parties to the Convention on Biological Diversity play catch up with advances in science and technology and address whether to include Digital Sequence Information (DSI) within ABS laws and policies. Some national governments have already taken steps to fold DSI into national ABS measures, while others are working first at the regional or international level. DSI does not fit easily into ABS approaches that involve bi-lateral agreements, because it is shared openly through publicly available databases, and a global multilateral approach to benefit sharing for DSI and the informational dimension of genetic resources is under consideration.

Scope of ABS in Central African Countries

The Central African region encompasses the vast Congo and Ogooué Basins, and globally significant biodiversity hotspots. The ten COMIFAC countries have participated in ABS dialogues for many years, including negotiations leading up to adoption of the Nagoya Protocol. In 2011, COMIFAC developed and endorsed a regional ABS strategy in order to establish a coordinated approach to ABS regulatory frameworks in the region. Through this process, a clear agreement emerged to create consistency in substantive aspects of regulations, like scope, while recognising flexibility in other areas, like permitting systems and procedures, in order to accommodate domestic institutional realities. The intention was to prevent a race to the bottom and avoid competition among COMIFAC countries for prospective users and benefit-sharing.

As of July 2020, as Table 2 shows, formulation of ABS regulatory frameworks in the COMIFAC countries remains under development, and countries are often going their own directions, rather than harmonising measures on issues like scope. Draft ABS instruments where they exist (e.g. Cameroon, Burundi, and Sao Tome and Principe) are taking very different approaches when it comes to what is included and what is not. In Cameroon, the Draft ABS regulatory framework takes a very broad approach to scope that includes access to and utilisation of genetic resources and associated traditional knowledge and derivatives. The subjects of the measure are access to plant, animal and microbial genetic resources in the national territory; access to aTK (associated Traditional Knowledge); conservation of GRs (Genetic Resources); application for and acquisition of intellectual property rights (IPRs) from the use of GRs and aTK; transfer to third party of GRs; and aTK for research and commercial purposes, and transboundary cooperation. The law will apply to both current access and use of genetic resources and those previously acquired.

Cola acuminata flowers

In Burundi, ABS regulations are more narrow and will apply to: GR over which the state has sovereign rights and to aTK, an approach in line with the Nagoya Protocol. The regulations also detail modalities for the fair and equitable sharing of benefits arising from utilisation of GRs and aTK. In Sao Tome and Principe, the aim of the Draft ABS regulatory framework is to establish the rules for access to GR, their protection, as well as access to aTK, relevant to the conservation and sustainable use of biodiversity, as well as the modalities for fair and equitable distribution of the benefits derived from its use and exploitation. This regulation will apply to access to existing GRs and aTK in the national territory, on the continental shelf, and in the exclusive economic zone for purposes of scientific research, technological development or bioprospecting.

The approach preferred by the DRC is to include ABS provisions in the 2014 Nature Conservation Law. This Law is structured around six Titles divided into Chapters, among which Title III relates to Biological and Genetic Resources and Traditional Knowledge, in accordance with the Nagoya Protocol on Access and Benefit Sharing (ABS). The scope of this measure includes GRs and aTK (Art. 50-55). This Law also suggests that ABS rules to be formulated in a ministerial decree will apply to access and exploitation (not utilisation) of GR and aTK. In Gabon, although the country has not yet defined or disclosed the scope of its prospective ABS regulations, official research authorisation and procedures administered by the National Center for Scientific and Technological Research (CENAREST) in conjunction with the National Parks Agency (ANPN) suggest movement towards a broad scope.

Most COMIFAC countries have yet to define or disclose the scope of their prospective ABS regulatory frameworks, and some are still considering the costs and benefits of broad vs narrow approaches to scope. ABS with a very broad scope – for example, including biotrade, biodiscovery, DSI, and aTK - can be complex to implement, and it is worth considering some of the different activities, uses, species and products that might fall under the umbrella of a broad approach to ABS. Below, we examine a few cases from the Central African region, divided into biotrade and biodiscovery examples, acknowledging that there can be overlap between these categories.

EXAMPLES OF BIOTRADE IN CENTRAL AFRICA

In Central Africa, the number of biotrade products is very large, and includes species and products in global trade (Table 1).

Raw materials are generally exported through export companies and sold in bulk. The final destinations of species vary significantly, and include the pharmaceutical industry, botanical medicines, food and beverages, nutraceuticals, cosmetics and personal care. Most are processed as active ingredients in products, with some inactive ingredients, and others sold whole as teas or herbs. Some have been traded for hundreds of years, and others for decades, but most were used commercially prior to the Convention on Biodiversity. All are used traditionally, although some are much more important locally than others. A few have substantial local and regional markets.

Echinops giganteus

Table 1: Examples of biotrade products in Central Africa

Cola spp. (Cola) *Acacia spp* (Gum Arabic) *Voacanga africana* (Voacanga) *Paunsinystalia johimbe* (Yohimbe) *Prunus africana* (Pygeum or Prunus) *Irvingia spp* (Bush mango) *Physostigma venenosum* (Calabar bean) *Strophanthus gratus* *Aframomum melegueta* (Alligator pepper)	• Diverse end markets – pharmaceuticals, food and beverage, nutraceuticals, botanical medicine, personal care, etc. • Some have long histories of commercial use (e.g. Gum Arabic), others more recent. • A few have important traditional uses and large local markets (e.g. Bush Mango, Cola, Alligator Pepper) others have less traditional and local value (e.g. Yohimbe, Strophanthus, Prunus). • New ABS partnerships have been developed for *Echinops giganteus* and *Mondia whitei.*

Other biotrade products have recently moved into global markets, including *Echinops giganteus* and *Mondia whitei*, the subject of a partnership between a French fragrance, flavor and natural ingredients company, V. Mane Fils S.A., and communities. In these cases, as in many others, the line between biotrade and biodiscovery is not always clear cut, since companies might source raw materials to produce commercial products like essential oils, but could also undertake further research on species, which then falls under biodiscovery.

In recent years, many countries have expanded the scope of ABS to include biotrade in order to promote sustainable use and more equitable value chains. In most countries, the bulk commodity trade of raw material falls outside the scope of ABS. Research and commercialisation of species, and use of traditional knowledge, falls within ABS.

Some countries, like South Africa, have sought to bring biotrade under the ABS umbrella, but this has created numerous difficulties for producers and traders, and generated few benefits. Biotrade raises important conservation, sustainable use, and equity issues, but it is not clear that ABS will always be the right solution to the challenges faced in the supply of raw materials. Fair trade rules, certification, forest management schemes, environmental impact assessments, and other existing approaches may better ensure sustainable and equitable value chains.

Bush mango drying on the side of a house. *Credit: Verina Ingram*

Biotrade products are regulated through a collection of forestry, environment, taxation, land tenure, resource rights, phytosanitary and other regulations, including both customary and statutory laws. When considering the scope of ABS laws, it is important to ask what a new ABS framework would achieve for sustainability and equitable benefit sharing associated with biotrade that existing laws do not. Is a new law, or implementation of existing laws, more effective? If ABS can provide an important complement to the existing regulatory framework, how might it build in different approaches for biotrade and biodiscovery?

EXAMPLES OF BIODISCOVERY IN CENTRAL AFRICA

As we have seen, ABS as originally envisioned under the CBD was focused on natural products collections for the pharmaceutical industry, and genetic resource collections for industrial and other biotechnology applications.

Examples of these programs in Central Africa include, in the 1990s, the International Cooperative Biodiversity Group (ICBG), which was a collaboration between Bioresources Development and Conservation Programme (BDCP) in Cameroon and Nigeria, the Walter Reed Army Institute of Research and the Smithsonian Tropical Research Institute in the US, the University of Dschang Cameroon, the International Centre for Ethnomedicine and Drug Development in Nigeria, and 13 other institutions. This program worked for many years across the region and combined a focus on drug discovery with development of locally important medicinal products and conservation.

Ancistrocladus korupensis

The US National Cancer Institute's (NCI) natural products collecting and drug discovery research in the 1980s and early 1990s was the kind of program many early ABS measures were based upon. In Cameroon, the NCI worked through the intermediary Missouri Botanical Garden, which partnered with local universities and research institutions like the National Herbarium and Limbe Botanic Garden. The most promising lead to come from collections in Cameroon was *Ancistrocladus korupensis*, a canopy liana collected in Korup National Park. For a number of years, a compound isolated from this species – michellamine b – showed great promise against HIV. In 1992, michellamine B was approved for preclinical development, and the NCI and partners began a program in Cameroon to develop cultivated sources of *Ancistrocladus korupensis* to insure against sudden supply shortages experienced with other natural product pharmaceuticals. Today, production through industrial fermentation, or synthesis, would be a more common source of raw material supplies. Michellemine b proved toxic and was dropped from research, but there are nine patent documents held by different assignees on *Ancistrocladus korupensis*, including the top ranking patent for Cameroon held by the University of Minnesota (see Box below on patents). Even if a species is dropped at some point in R&D, it is very likely to be picked back up again at a later date.

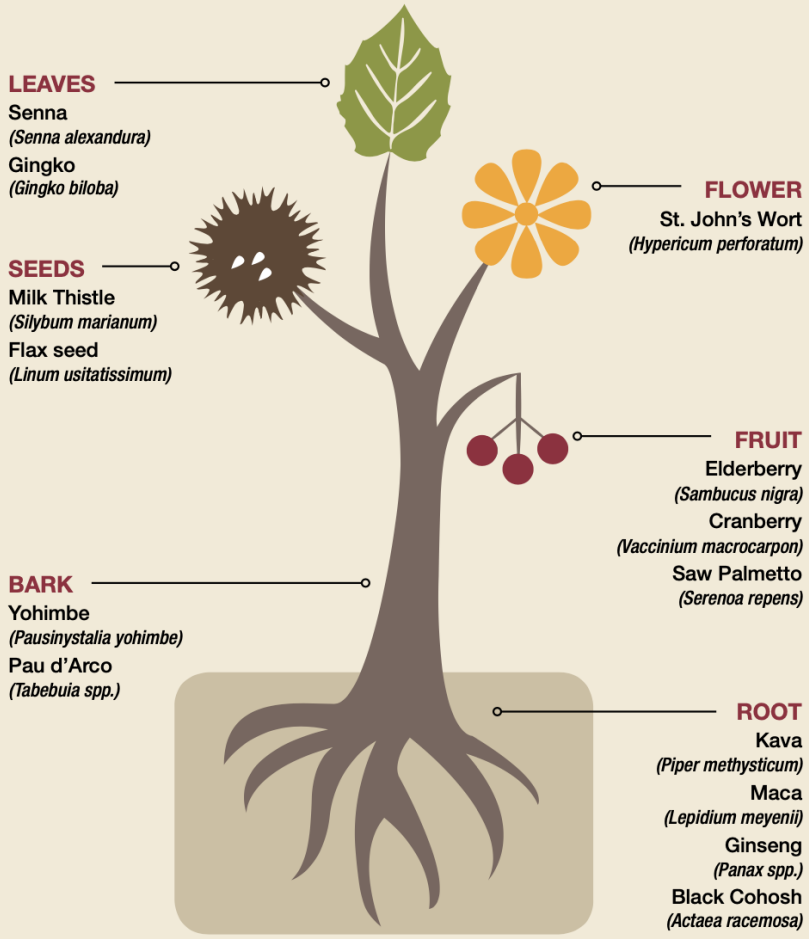
Collections like those undertaken by the Missouri Botanical Garden for the NCI are unusual today in the pharmaceutical industry, but some continue at a smaller scale, including those for industrial biotechnology companies that value extremophiles – organisms that can live under extreme conditions similar to those found in industrial processing and manufacturing. In 2007, Eli Lilly company in the US pursued a partnership in Cameroon around the use of a plant of promise, but was unable to secure an ABS agreement because ABS laws and institutions were in flux, and this was abandoned.

Biodiversity Patents from Cameroon

A study of biodiversity in the patent system in Cameroon examined patents as an important indicator of investment in research and development for commercial products. In addition to partnerships and ABS agreements, export figures, and other approaches, patents can provide a view of species under study, the extent of interest, and where research is located. Oldham et al (2013), for the ABS Capacity Development Initiative, found that plants, animals, insects, bacteria, viruses and other species found in Cameroon are a focus of research and development in genetic engineering, pharmaceuticals, biocides, new agricultural plants, cosmetics, foodstuffs and detergents, and are used as research tools. They identified approximately 1,592 species in patent data that are known to occur in Cameroon, and 22 species were identified that were directly sourced from or are likely to originate from Cameroon. Important patents include species in biotrade and biodiscovery including *Ancistrocladus korupensis*, *Pausinystalia johimbe*, and *Prunus africana*.

Updated information by Paul Oldham, 2015, on "The Scientific Landscape for Access and Benefit Sharing in Cameroon" can be found here: https://public.tableau.com/profile/poldham#!/vizhome/Cameroon_0/Cameroon

	Genetic resources	Biological resources
CBD definition	Genetic material of actual or potential value. Genetic material is any material of plant, animal, microbial or other origin containing functional units of heredity	Biological resources include genetic resources, organisms or parts thereof, populations and any other biotic component of ecosystems with actual or potential use or value for humanity
Resource aspects of interest	Genetic information contained within genetic material	Qualities associated with whole organism, multiple compounds
Levels of technology	High	Low to medium
Sizes of companies	Small through to very large	Small to medium, some very large
Size of sectors	Very large	Small to medium, some very large
Use of material	R&D to develop new products, ingredients, processes, etc.	Industrial processing and manufacture
Form accessed	Digital transmission of genetic information and some physical material	Bulk raw material, often a commodity
Use of TK	None to very little	Can be significant



Has ABS become too complex and broad to be effective? Would ABS function better using principles and requirements that are integrated into existing measures, rather than a single regulatory umbrella for extremely different activities?

Source: Laird and Wynberg 2017

KEY MESSAGES

Differences Between Biotrade and Biodiscovery and Implications for the Scope of ABS and Implementation

A clear scope in ABS laws is important because it makes implementation and permitting easier, less confusing and prone to misunderstandings, and benefits are more likely to result. It also helps governments identify the institutional capacity and coordination required for implementation. As an indication of differences between subject matter and activities that will create challenges for ABS implementation if scope is very broad, and laws do not address these differences, following are key messages for policy-makers on biotrade and biodiscovery.

Biotrade

- Species are sold as bulk raw materials, and sometimes research is undertaken to expand or improve uses; the bulk trade itself is not usually part of ABS regulations.
- Traditional knowledge (TK) is regularly used to identify uses, improve domestication and harvesting, and in marketing of products; ABS can work to achieve PIC and benefits associated with TK in ways other regulations - e.g. taxation, trade, forestry - usually do not.
- Companies and commercial revenues are usually smaller in biotrade than in biodiscovery but the volume of products produced is usually larger, and the time it takes to develop them shorter.
- Biotrade products can have important subsistence and traditional uses, and substantial local and regional markets; international trade and ABS agreements for the same species should avoid impacting local uses, trade, and livelihoods. The benefits from local use and trade are often greater than those from international trade, and may be more equitably shared within communities.

Cola nitida

- Biotrade products and ingredients are often faddish and subject to hype, with boom-bust cycles common (e.g. changes in fashion, new research shows toxicity or inactivity, a new "better product comes on line). Experiences in Cameroon, for example with *Prunus africana,* show that investments in new value chains can be risky for harvesters, small enterprises and communities in Central Africa, no matter how well-designed an ABS agreement. If ABS regulates species also found in local and regional trade, there is a danger that these new regulations will overwhelm the fairly modest revenues made at the local level, will add new layers of paperwork and bureaucracy, and might create opportunities for corruption, thereby adding burdens and reducing benefiits for harvesters and traders.
- Examples of non-monetary benefits from biotrade include community development projects and longer-term contracts for the supply of raw materials, which can provide security to communities. Monetary benefits include premium prices paid for materials, and very rarely royalties.

Biodiscovery

- Companies tend to be large, research intensive, and in the case of pharmaceuticals and biotech, often very profitable; this means monetary benefits from ABS agreements are potentially significant; however very few commercial products are developed, and R&D may take many years.
- Many of the companies working in biodiscovery are based in the United States, which is not a Party to the CBD; this has significant implications for the ABS policy debate.
- Companies increasingly focus on genomics-driven research; the large-scale collections and research practices that informed the development of ABS under the CBD are no longer common; interest in genetic and biological diversity continues but it is used and accessed in different ways today.
- Physical samples collected in the COMIFAC region and provided to companies in the past live on in *ex situ* collections which are often widely shared and part of the global exchange of DSI through databases; it is important for governments and research institutions to ensure, when possible, that past collections are covered by ABS requirements for benefit sharing.
- Digital sequence information (DSI) creates new challenges for ABS, beginning with the definition of what it encompasses, and the difficult fit with ABS bi-lateral agreements, and post-Nagoya Protocol approaches that emphasise physical samples. A new approach to benefit sharing will be required for DSI, possibly through a multilateral approach.
- High tech sectors can provide numerous non-monetary benefits to universities, research institutions and others as part of research collaborations, and these should be emphasised in ABS approaches. They include technology transfer, training, and research exchanges. Since the CBD entered into force, these types of benefits have proven to be by far the most significant.

Cola acuminata nut seeds with twigs

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Table 2: ABS Measures in COMIFAC Countries – laws, scope, and institutions

Countries	Laws, decrees, and other policy measures on ABS	Scope and definitions included in measures – what do the laws cover?
Burundi	(1) 2013 Draft law on Biodiversity in Burundi 2013 (version). This is a framework law. Chapter 6 deals with: Bioprospection, Access to Biological Resources, Benefit Sharing and the Protection of the associated Traditional Knowledge. (2) 2016 National Strategy and Action Plan on Access to Genetic Resources and Benefit Sharing arising from their utilisation in Burundi and (2017) draft Decree on Access to GRs and the fair and equitable sharing of the benefit arising from their utilisation.	The scope of Burundi prospective ABS regulations is found in the 2017 Draft ABS decree. The Draft ABS decree applies to: genetic resources over which the state has sovereign rights and to the aTK. The law also applies to the fair and equitable sharing of benefits arising from the utilisation of GRs and aTK. The ABS decree does not apply to GRs whose access and benefit sharing is governed by other special international instruments whose objectives are in conformity with and do not run counter to the objectives of the CBD and Nagoya Protocol. Several key terms are defined by the law, including: (1) access; (2) collection; (3) Internationally Recognised Certificate of Compliance; (4) user; (5) utilisation of genetic resources; (6) mutually agreed terms (MAT); (7) genetic resources accessed illegally. Other terms not defined in the draft decree are defined in the 2013 draft law including (1) bioprospection, (2) biotechnology; (3) Prior Informed Consent; (4) user rights; (5) supplier of genetic resources; (6) genetic material; (7) biological resources; (8) genetic resources; (9) traditional knowledge and (10) benefit sharing.
Cameroon	(1) The August 2018 drafts of the prospective ABS regulatory infrastructure of Cameroon are: Draft ABS law entitled: Loi Relative à l'Accès aux Ressources Génétiques et aux Connaissances Traditionnelles associées et au Partage Juste et Equitable des Avantages découlant de leur Utilisation; (2) Draft implementing decree setting the terms of access to genetic resources and associated traditional knowledge and the fair and equitable sharing of the benefice arising from their utilisation; (3) Draft model ABS permit; (4) Draft model PIC and; (5) Draft model MAT	The draft ABS regulatory framework has a very broad scope, and applies to access and utilisation of genetic resources and associated traditional knowledge and derivatives including: access to plant, animal and microbial genetic resources in the national territory, access to aTK, conservation of GRs, application for and acquisition of IPRs from the use of GRs and aTK, transfer to third party of GRs and aTK for research and commercial purposes, transboundary cooperation; current use of GRs and/or previously acquired. It does not apply to the biological resources that are accessed from Cameroon but are not utilised as genetic resources in line with the draft law's definition of the term 'utilisation' and excludes from its scope, the exchange of genetic resources and associated traditional knowledge among rural communities for their livelihood. The draft law defines several key terms, such as biological resources, genetic resources, access, prior informed consent, utilisation. But these definitions generate a great deal of confusion.

Countries	Status of the policy process	Ministry where ABS Focal Point is located	Extent ABS is integrated with existing laws that regulate NTFPs
Burundi	There is much to do in terms of the further development and eventually implementation of these instruments. The Biodiversity Law of 2013 is yet to be adopted and when adopted, Chapter 6 will require implementation regulations to be drafted and adopted to come into effect.	The National Focal point is based at the Office Burundais pour la Protection de environment (OBPE) which is an agency of the Ministry of Water and Environment (which is the National Competent Authority). The draft decree provides for the establishment of the National ABS Committee which is an inter-ministerial and multi-agency committee.	Neither the 2013 Draft Biodiversity Law nor the 2017 draft ABS decree address access, management or conservation and use of NTFPs. On the proposed ABS regulatory framework, while the ABS CHM Burundi list the Ministry of Water and Environment as the national competent authority, the draft ABS decree seems to indicate that the Ministry of Agriculture is an additional competent authority. This creates potential for conflict and confusion on who makes the final decision for the issuance of an access permit. New and emerging issues such as DSI are not covered in the draft instrument. The regime for monitoring and surveillance is vague and does not reflect the ambitions stated in the 2016 ABS strategy. This raft of instruments seems to have guided the formulation of the 2014 ordinance on the exploitation and commercialisation of Osyris lanceolate. But because the draft decree is actually not yet adopted and therefore not under implementation there remains a great deal of confusion.
Cameroon	All the instruments contemplated for the ABS regulatory infrastructure in Cameroon are still going through national validation/ adoption process. Cameroon therefore does not yet have a Nagoya Protocol Compliant ABS legal framework in a strict sense.	The National Focal Point has been designated and is based at the Ministry of Environment and Nature Protection. The Ministry in charge of the Environment and Nature Protection is also the NCA, assuming its responsibilities with technical and advisory support of the National ABS committee.	The draft versions of the proposed ABS regulatory infrastructure are likely to create a great deal of confusion, including Article 6(3)(a) with a lack of legal clarity and legal certainty, and therefore transparency. For example, in the 2018 draft, biological resources and genetic materials are defined exactly the same. PIC is defined as an authorisation to access. However, according to the draft model PIC, PIC is not an access authorisation, but simply allows someone to commence MAT negotiations. There are several issues that need ironing out, for these instruments to come close to compliance with NP and enable smooth implementation when that eventually begins. The draft instruments do not make any mention of DSI, but genetic information is mentioned. According to the draft ABS law, genetic information derived from genetic resources of Cameroon's national heritage are under the sovereign ownership of Cameroon. In a similar vein, the utilisation of 'genetic information' is a specific category of utilisation, amongst the various categories of utilisation of GRs and aTK. The system of monitoring and surveillance of the utilisation of genetic resources, which is established by the law, is not fully operationalised by the Draft Implementing decree.

Countries	Laws, decrees, and other policy measures on ABS	Scope and definitions included in measures – what do the laws cover?
Congo	The 2017 National ABS strategy is the only policy instrument governing ABS issues in Congo. However, based on the June 2015 report from an IUCN commissioned study on progress on implementing the Nagoya Protocol on Congo, the country selected to streamline ABS principles into domestic forestry and environmental laws, while making progress towards the development of a dedicated ABS law. It is not clear how this streamlining process has evolved thus far.	The scope isn't clearly defined and the 2017 National ABS strategy does not encapsulate important definitions. Congo has defined its vision on ABS: to have access to GRs and aTK regulated by 2025 and to see the benefits deriving from the utilisation of GRs and aTK improve the living standards of local communities and contribute to poverty alleviation.
Chad	There is currently no NP compliant ABS regulatory infrastructure.	There is no indication as to how Chad plans to define the scope of its future ABS regulatory framework.
Central African Republic	There is currently no NP compliant ABS regulatory infrastructure in the Central African Republic.	There is no clear indication as to how the Central African Republic envisages defining the scope of its future ABS regulatory framework.
Democratic Republic of Congo	Law No 14-003 of 11 February 2014 on Nature Conservation, Title III of the Law deals with Biological and Genetic Resources and Traditional Knowledge. The law provides for the adoption of an implementing decree that will define the modalities and procedures of access and benefit sharing.	Although there is no clear definition of the scope of ABS regulations in the DRC, the 2014 Nature conservation law seems to signal that, the scope of ABS extends to access and exploitation (not utilisation) of genetic resources and the traditional knowledge associated with genetic resources. The law fails to define key terms such as access, resources, utilisation; however, genetic resources, genetic materials, natural resources, local communities, product, biopiracy and bioprospection are defined by the law.

Countries	Status of the policy process	Ministry where ABS Focal Point is located	Extent of integration of ABS with existing laws that regulate NTFPs
Congo	It is not clear how the streamlining and integration of ABS principles in sectoral environmental and forestry laws has evolved thus far. The 2017 National ABS strategy reiterates the approach revealed in the 2015 IUCN report: that Congo plans to first integrate ABS principles into existing laws, then formulate a stand alone ABS law which will identify the National Competent Authority.	The ABS focal point has been designated and is based at the Directorate of Sustainable Development in the Ministry of Environment and Tourism.	It is not clear how the ABS regulatory framework will link with the regulation of NTFPs.
Chad	A 2015 report on progress made in by Chad towards implementation of the Nagoya Protocol, indicates that Chad envisages developing stand-alone ABS legislation based on a domestic ABS strategy. It is not clear what progress has been achieved thus far in the formulation of the ABS strategy and the ABS regulatory legislation.	The National Focal Point for ABS is based at the Directorate of Biodiversity Conservation and National Parks of the Ministry of Environment, Water and Fisheries.	As of yet, there is no indication about the extent to which ABS will or will not be linked to the regulation of NTFPs.
Central African Republic	The 4th (2010) and 5th (2017) National reports to the CBD broadly contemplates the implementation of Art 3 of the CBD and the Nagoya Protocol. Specifically, on the progress towards the realisation of the Aichi biodiversity target 16, the 5th report to the CBD provides that progress is made in the formulation of a legal instrument on NTFPs, which will include benefit sharing provisions in the spirit of the NP.	The National ABS focal point is based at the Ministry of Environment and Sustainable Development.	There are indications in the 5th report to the CBD that the Central African Republic will include NTFPs in the ABS regulatory framework.
Democratic Republic of Congo	The Nature Conservation Law envisages that its ABS provisions will be implemented through an implementing regulation that will be enacted in the form of a decree. The implementing decree is currently under development.	The ABS focal point is based at the Ministry of Environment and Sustainable Development, which is the designated National Competent Authority. A Decree will define the functioning and competencies of the National Competent Authority.	The 2014 Nature Conservation Law has a component that deals with Trade in the Species of Fauna and Flora threatened with extinction. Emerging issues such as DSI are not addressed. A regime for monitoring and surveillance of the utilisation of GRs is also not included. A process was launched aimed at the formulation of the ABS implementing decree; it is not clear what progress has been made.

Countries	Laws, decrees, and other policy measures on ABS	Scope and definitions included in measures – what do the laws cover?
Gabon	The National ABS Strategy of Gabon 2012 (although not published in the CHM) and national administrative procedures pertaining to the research authorisations in the national territory and in National Parks and peripheral areas (2015).	Any research to be carried out in the national territory by a foreign researcher must be authorised through a research permit, to be issued by the Head of CENAREST (National Center for Scientific and Technological Research). The foreign researcher must work in collaboration with a domestic partner. For any research targeting a National Park or peripheral areas, the CENAREST must involve the National Parks Agency in the assessment and issuance of the research authorisation.
Equatorial Guinea	Not yet a party to the Nagoya Protocol and no domestic ABS regulatory infrastructure in the country.	There is no indication as to how Equatorial Guinea plans to define the scope of its future ABS regulatory framework.
Rwanda	Rwanda has not yet adopted and/ or published its regulations on ABS in fulfilment of its obligations under the Nagoya Protocol, but a draft ABS regulation has been under development since 2016.	In the absence of a publicly available draft text on ABS, it is difficult to establish what Rwanda plans to include in the scope of its ABS regulations.
Sao Tome & Principe	A Draft ABS regulatory framework is under development to establish the rules for access to GRs, their protection, as well as access to aTK, relevant to the conservation and sustainable use of biodiversity, as well as the modalities for fair and equitable distribution of the benefits derived from its use and exploitation.	This regulation will apply to access to existing GRs and aTK in the national territory, on the continental shelf, and in the exclusive economic zone for purposes of scientific research, technological development or bioprospecting.

*Table adapted from an IUCN report compiled in 2015 by Dr Marcelin Tonye Mahop from a study on needs, constraints and progress in the implementation of the Nagoya Protocol, complemented with additional/up-to-date information sourced from the CHM pages (https://absch.cbd.int/) of the COMIFAC countries.

Countries	Status of the policy process	Ministry where ABS Focal Point is located	Extent of integration of ABS with existing laws that regulate NTFPs
Gabon	In the 2012 National ABS strategy, Gabon planned to adopt a Nagoya Protocol compliant ABS regulatory framework by 2015. To date, there is no ABS legal framework, but some pillars of such a framework exist. A study on checkpoints was carried out and validated in 2017. There are talks concerning a possible revision of the 2012 ABS strategy and development of an ABS legal instrument is also talked about.	The ABS national focal point is based at the Ministry of Water, Forestry and Environment.	It is not clear how Gabon plans to address regulation of the NTFP sector in the context of its evolving ABS legal framework. Through the study on checkpoints in relation to the utilisation of GRs, there was an indication that Gabon considers addressing illegal collection and commercialisation of NTFPs through its ABS instrument.
Equatorial Guinea	It is not clear what progress has been made on the ABS regulatory front.	The national ABS focal point is based at the Directorate of Environment of the Ministry of Agriculture	There is a lot to do in Equatorial Guinea. Equatorial Guinea provides no indication how ABS regulations would link with or address (or not) NTFPs
Rwanda	In 2015, Rwanda signaled in its 5th national report to the CBD dated 2014, that in relation to advancing the realisation of the Aichi Target 16, the country intended to include NP ABS principles in a national ABS legislation and put ABS administrative measures in place by 2017. The 2017 progress report on the implementation of the NP suggests the national ABS legal framework was developed, but yet to be published in the official Gazette.	The ABS focal point is based at the Environmental Management Authority (EMA). The National Competent Authority has not yet been officially published/indicated in the CHM but the interim report on progress towards implementation of the NP indicates that the NCA has been designated.	It is not clear how Rwanda plans to address the regulation of NTFPs as the country advances domestically in the formulation and adoption of its ABS regulatory framework. Work on the ABS ministerial order was underway as far back as 2015/2016 and the process may well have already completed, but the document is not available to the public and not yet published in the official Gazette.
Sao Tome & Principe	The interim report on progress towards implementation of the Nagoya Protocol dated 2017 reports that the National ABS strategy and draft measure is under development.	The national ABS focal point is based at the Ministry of Public Works, Infrastructure, Natural Resources and Environment. The National Competent Authority designated by decree of the Minister in 2017 is the Directorate of Environment.	It is unclear how Sao Tome & Principe plans to address the commercialisation of NTFPs as the country considers its ABS regulatory framework.

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