ACCESS & BENEFIT-SHARING IN LATIN AMERICA & THE CARIBBEAN

A science-policy dialogue for academic research

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A science-policy dialogue for academic research

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FOREWORD

This document was written by the Core Team[1] of the project *Access and Benefit-Sharing in Latin America and the Caribbean: A science-policy dialogue for academic research*[2] whose objective was to gather information on the salient elements regarding Access and Benefit-Sharing (ABS) for academic research in Latin America and the Caribbean (LAC) region. The project was carried out by a consortium consisting of DIVERSITAS – an international programme of biodiversity science[3] (lead organisation), the International Council for Science Regional Office for LAC[4] (ICSU-ROLAC), the Swiss Academy of Sciences[5] (SCNAT) and the International Union of Biological Sciences[6] (IUBS), in collaboration with University of Bonn[7] and the International Union for Conservation of Nature – Regional Office for South America (IUCN-Sur)[8].

The document contains reflections on ABS for non-commercial research. It compiles the results of a Science-Policy workshop (20-22/11/2013, Lima, Peru) co-organised with the University of Bonn and gathering members of governmental agencies and academics from nine pilot countries in the region, namely, Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Ecuador, Mexico and Peru (**Annex 1**). The workshop had scientists and policy makers share their reflections on opportunities provided by the ABS system and conditions contributing to their promotion in their respective country.

The document also examines ABS issues through the lens of eleven case studies representing Argentina, Brazil, Bolivia, Colombia, Costa Rica, Ecuador, Mexico and Peru that cover varied organisms (e.g. aquatic and terrestrial fauna or flora, microbes) and varied researches (e.g. ecology, genetics, microbiology, ethnobotany; **Annex 2**).

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1. Members are the authors of this document.
2. ICSU grant 2013
3. www.diversitas-international.org/
4. www.icsu.org/latin-america-caribbean
5. www.scnat.ch/; http://abs.scnat.ch
6. www.iubs.org/
7. German research foundation (DFG) grant HO 3780/3-1.
8. UNEP/GEF Regional project on Strengthening the Implementation of Access to Genetic Resources and Benefit-Sharing Regimes in LAC, http://adb.portalces.org/

This document was also published in Spanish and its executive summary in English, Spanish, Portuguese and French. The PDFs are available online on the websites of DIVERSITAS (www.diversitas-international.org/activities/policy/cbd-1/access-and-benefits-sharing-abs) and of the SCNAT (http://abs.scnat.ch/downloads/index.php).

ABBREVIATIONS

ABS Access and Benefit-sharing
ATK Traditional knowledge associated to genetic resources
CBD Convention on Biological Diversity
LAC Latin America and the Caribbean
MAT Mutually agreed terms
NGO Non-governmental organisation
NP Nagoya Protocol
PIC Prior informed consent
R&D Research and development

USE OF TERMS

ACCESS
Short for "access to genetic resources". Process of obtaining samples of biological and/or genetic material from areas within national jurisdiction for purposes of research on conservation, commercial application or industrial use[9].

BIOLOGICAL RESOURCES
Genetic resources, organisms or parts thereof, populations or other biotic components of ecosystems with actual or potential use or value for humanity (sensu Art. 2 CBD)[10].

GENETIC RESOURCES
Genetic material – viz. any material of plant, animal, microbial or other origin containing functional units of heredity – of actual or potential value (Art. 2 CBD).
Comment: The CBD uses "genetic resources" as a legal term and not in its scientific, technical sense. In a broad sense, genetic resources are also "accessed" when accessing "genetic material" or "biological resources" for biodiversity-related research.

BIOPROSPECTING
The systematic research of biodiversity and associated traditional knowledge that aims to identify organisms, genetic material, chemical components and proteins with potential industrial or commercial use.

BIOTECHNOLOGY
Any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use (*sensu* Art. 2 CBD).

CHANGE OF INTENT
Short for "change of intent from non-commercial to commercial research". The investigation in research and development for commercial ends of results with a commercial potential that were produced in non-commercial research.

ACADEMIC NON-COMMERCIAL RESEARCH
Research contributing to the conservation and sustainable use of biodiversity in the sense of Art. 8(a) NP that is carried out by Academia or other not-for-profit organisations.

RESEARCH AND DEVELOPMENT
Research undertaken to explore the potential commercial use of a resource and the associated knowledge.

TRADITIONAL KNOWLEDGE
Knowledge, know-how, skills and practices developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity, and found in varied contexts, including agricultural, scientific, technical, ecological and medicinal[11].

TRADITIONAL KNOWLEDGE ASSOCIATED WITH GENETIC RESOURCES
Knowledge of the properties and uses of genetic resources and their derivatives held by indigenous and local communities [12].

9. Pisupati B. 2007. UNU-IAS Pocket Guide on Access to Genetic Resources, Benefit Sharing and Bioprospecting. Yokohama, Japan: UNU-IAS. 67p Available at www.cbd.int/doc/book.aspx?id=61482 (accessed 15/04/2014)

10. Full texts accessible at www.cbd.int/convention/text/ for the CBD and www.cbd.int/abs/text/default.shtml for the NP (accessed 03/11/2013)

11. www.wipo.int/tk/en/tk/ (accessed 15/04/2014)

12. Adapted from WIPO, Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC), The Protection of Traditional Knowledge – Draft Articles, WIPO/GRTKF/IC/2, 30 May 2013. www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_24/wipo_grtkf_ic_24_facilitators_document_rev_2.pdf (accessed 23/04/2014)

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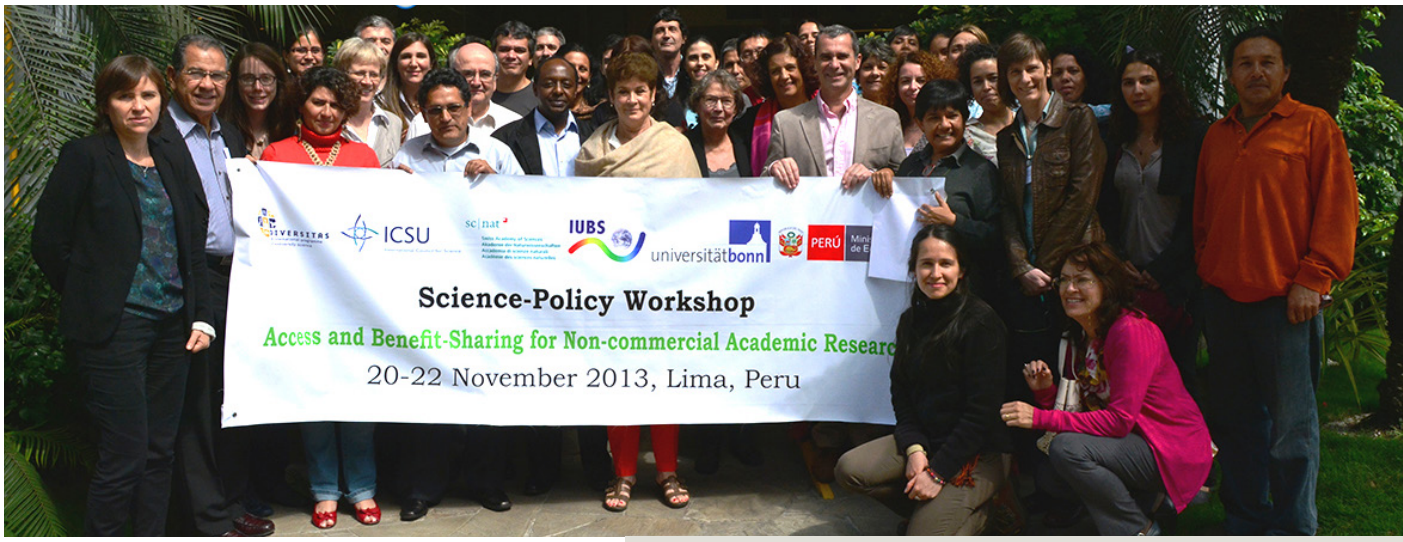
1. INTRODUCTION



Participants in the Science-Policy workshop in November 2013 in Lima, Peru
© Sarah Winands

1.1 Outline of the factual situation and the related challenges

Biological diversity (or biodiversity, i.e. the diversity of life on Earth within and between genes, species, and ecosystems) is essential for the survival of mankind. It assures the provision of goods and services necessary for human well-being, such as food and fibres, purified water and medicinal plants. However, biodiversity is being lost at an alarming and accelerating rate while some species disappear before they have even been discovered.

To halt this loss and the detrimental impacts it has on mankind, the Convention on Biological Diversity (CBD) signposts the goals of conservation of biodiversity and the sustainable and equitable use of its components. To reach these goals, knowledge about biodiversity, its functions and potential sustainable uses is needed. In particular, the third goal of the CBD, "the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources", supports the advancement of knowledge on biodiversity by including the sharing of knowledge, technology, and economic means.

Academic research plays an essential role in generating the knowledge on biodiversity necessary for its conservation and sustainable use. To this end, biodiversity researchers need to be able to observe, analyse and collect biological resources, and to cooperate and exchange information within the academic community. This is particularly prevalent in Latin America and the Caribbean (LAC) since the region is globally renowned for its rich and interconnected biological and cultural diversity (several "biodiversity hotspots" are present in the region[13] as well as diverse practices, customs and uses of indigenous and local communities (ILCs) that interact with).

In order to assure access to biological resources and develop research collaboration, a common understanding between researchers and policy makers is needed with regard to the legal and administrative requirements for accessing biological resources. A preliminary observation is that the legal regime on Access and Benefit-Sharing (ABS) in the LAC countries appears as multi-layered and varied. Most countries have a national legislation, sometimes even regional ones, on access to genetic resources and associated traditional knowledge (ATK). Moreover, the four countries in the Andean Community adopted a common regime in 1996 (Decision 391), but nevertheless have developed additional national regulations and procedures. Hence, there is an overall heterogenous and complex system of access regimes that represents a mounting challenge for scientists. This is true for researchers working nationally (e.g. projects between provinces), but also for those working internationally within the LAC region, or in South-South or North-South research projects. The difficulties met by academic researchers seem to result from the lack of clear differentiation between research for non-commercial and commercial ends, and the uncertainty of the authorities as to which type of non-commercial research might be used in a commercial context at a later stage.

13. Myers, N., R.A. Mittermeier, C.G. Mittermeier, G.A.B. da Fonseca and J. Kent. 2000. Biodiversity hotspots for conservation priorities. Nature 403:853-858. Available at www.nature.com/nature/journal/v403/n6772/full/403853a0.html (accessed 15/04/2014)

1.2 Delimitation of the topic addressed in this document

Against the background of the above-mentioned challenges, this document focuses on academic non-commercial research on genetic resources and ATK that contributes to the conservation and sustainable use of biodiversity in the sense of Art. 8(a) of the Nagoya Protocol (NP). This scope also includes research progressing into research and development (R&D) for a potential commercial use, in order to capture concerns regarding situations of change of intent.

The document takes into account research carried out by academic institutions as well as by other not-for-profit organisations such as non-governmental organisations (NGOs) and public institutions that undertake non-commercial research. The document does not include 1) the question of intellectual property rights (in particular patenting at the interface with ATK); 2) the interface of ABS and biotrade; and 3) ABS as implemented in the Multilateral System on Access and Benefit Sharing of the International Treaty on Plant Genetic Resources for Food and Agriculture[14].

The document proceeds as follows: the first part gives the background on the obligations of the CBD and the NP, the related perspectives of governmental agencies and academic researchers and an overview of the interface between academic research and ABS. The second part focuses on solutions found or proposed firstly, in the national legislation and implementation, and finally in presenting factors supporting a successful ABS process as identified by the workshop participants.

14. www.planttreaty.org/ (accessed 15/04/2014)

2. THE ABS SYSTEM IN THE CBD AND THE NP: ELEMENTS OF IMPORTANCE FOR ACADEMIC RESEARCH

2.1 The regulation in the CBD

The CBD's threefold, interconnected objectives are "the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources" (Art. 1 CBD)[15]. In Art. 15.7 CBD on benefit-sharing "research" is explicitly included among the activities triggering the obligations to share benefits ("sharing [...] the results of research and development"), making it clear that academic research is under ABS obligation too.

The modalities of sharing of benefits subsume both "by appropriate access to genetic resources and by appropriate transfer of relevant technologies" (Art. 1 CBD). This is an indication that the benefit-sharing obligation is to be read in connection with Art. 16-19 CBD that give indications as to possible modalities (Art. 16: Access to and transfer of technology; Art. 17: Exchange of information; Art. 18: Technical and scientific cooperation; and Art. 19: Handling of biotechnology and distribution of its benefits). In non-commercial research benefit-sharing includes also non-monetary benefits.

2.2 The regulation in the NP

The NP[16] is a 'sub-contract' to the CBD. This means that it has to be ratified by the parties that wish to adhere to it; otherwise those parties are bound by the CBD only. It contains specifications of the ABS system that are relevant for non-commercial research too.

Art. 2(c) NP concretises the phrase 'genetic resources' (as defined in Art. 2 CBD) through the definition of "*Utilization* of genetic resources" (emphasis added by authors), now explicitly subjecting biochemical compounds to the ABS system ("Utilization of genetic resources" means to conduct research and development on the genetic *and/or biochemical* composition of genetic resources" (emphasis added by authors)).

15. Convention text accessible at www.cbd.int/convention/text/ (accessed 03/11/2013)

16. Protocol text accessible at www.cbd.int/abs/text/default.shtml (accessed 03/11/2013)

Art. 6 and 7 NP give details about measures contracting parties shall take, as appropriate, to ease application for PIC and negotiations of MAT for access to genetic resources and ATK. Moreover Art. 13 NP gives details about the agencies to be established and their functions in the ABS process (i.e. focal points, competent national authorities), in order to provide for legal certainty, clarity and transparency of their domestic access procedures.

Art. 15 and 16 NP define contracting parties' obligations to take measures to assure compliance of users with requirements for access to genetic resources and ATK. This is complemented by the requirement that utilisation be monitored by checkpoints (Art. 17). Those checkpoints must cover "inter alia, any stage of research, development, innovation, pre commercialization or commercialization" (Art 17.1(a)(iv)), in other terms, monitor a change of intent.

The regulation on "Fair and Equitable Benefit-Sharing" (Art. 5) explicitly includes non-monetary benefits in the benefit-sharing obligation.

Art. 23 refers to access to technology by, and transfer of technology to, developing country parties as required to strengthen a viable technological and scientific base for the accomplishment of the CBD and the NP objectives. The article calls for collaboration and cooperation in technical and scientific R&D programmes, including biotechnological research activities.

Overall, the NP regulations have the potential to ease concerns of both governmental agencies and of academic researchers as regards uncertainties about the control of the utilisation of the accessed resources and the difficulties of access to genetic resources, respectively.

EXCERPT FROM THE NP

Article 8. Special Considerations

In the development and implementation of its access and benefit-sharing legislation or regulatory requirements, each Party shall:

(a) Create conditions to promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries, including through simplified measures on access for non-commercial research purposes, taking into account the need to address a change of intent for such research.

2.3 Promoting and encouraging research contributing to conservation and sustainable use of biodiversity

Art. 8 NP stipulates the obligation of the contracting parties to promote and encourage research contributing to conservation and sustainable use of biodiversity, particularly in the developing countries. This is to include *"simplified measures on access for non-commercial research purpose"* (emphasis added by authors). It is complemented by the obligation to take "into account [...] a change of intent".

This last aspect has two facets:

- It entails the implementation of a control and compliance mechanism in order to be able to detect a change of intent without respective PIC and MAT; and
- It relates to providing rules regarding obligations of the researchers and respective procedures in the case of research results or genetic resources moving towards commercial research.

Orchids in Atlantic Forest of Minas Gerais, Brazil © Manuela da Silva

3. GENERAL PROBLEM STATEMENT IN REGARD TO ACADEMIC RESEARCH

Due to the differences in the "worlds" academic researchers and governmental agencies act in, communication and mutual understanding of the respective needs, interests and concerns involved might be difficult. It is therefore crucial to be aware of the respective concerns of both researchers and governmental agencies on ABS issues and how these may present constraints or opportunities that are critical to consider when designing measures for facilitated access.

3.1 Perspective of governmental agencies and administrative authorities[17]

A core difficulty of ABS for governmental agencies is the need to control the flow of resources, research findings and associated information, in order to assure obtaining a share of the benefits generated by their use. The scholarly standards for disclosure of information for scientific transparency and the exchange of material among peers collide with providers' need to control [18].

Moreover, the connection between the generation of knowledge and its subsequent use might be difficult to detect, because there may be a substantial time-lag between the publication of research results and their commercial utilisation. Additionally there might be a geographical disconnect between the place of collection and the place of processing; as well as a jurisdictional disconnect between the place where the resource originates and the place where research findings enter commercial research or use.

Likewise, lacking knowledge about scientific methods and goals makes it difficult for administrative authorities to evaluate scientific research proposals submitted for ABS access requirements. Moreover it is complicated, time-consuming, and expensive to understand and to follow the flow of knowledge about the resources through the research process. Finally, administrators may fear political pressure if their access permits are too lax. They thus tend to handle ABS applications overly restrictive.

Churince, an extreme and fragile wetland in Cuatro Ciénegas Coahuila, important for its microbial diversity and water security of local communities (case ME), Mexico © Luis Eguiarte

3.2 Perspective of academic research institutions[19]

Academic research does not have the financial or organisational means for long-lasting negotiations, and needs to fulfil set goals within a set period of time (the lifespan of research projects is usually around 3 to 4 years). Complicated and long-lasting ABS-procedures may deter scientists from conducting research on biological resources.

17. Martinez S.I. and S. Biber-Klemm. 2010. Scientists – take action for access to biodiversity. COSUST 2(1-2):27-33. Available at www.cbd.int/abs/doc/implications-abs-academic-research-en.pdf (accessed 22/04/2014)

18. See the Ecuadorian case documented by Nemogá, G. and O. Lizarazo. 2013. Global Ocean Sampling Expedition, Galapagos National Park: collection activities and implementation of legislation In: Ríos, M. and A. Mora (Eds.). Six Cases Studies in Latin America and the Caribbean: Access to Genetic Resources and Benefit Sharing. UICN-PNUMA/GEF-ABS-LAC. Pp. 77-88. Available at www.portalces.org/index.php?option=com_sobi2&sobi2Task=sobi2Details&sobi2Id=1367&Itemid=76 (accessed 23/04/2014)

19. Biber-Klemm S., S.I. Martinez and A. Jacob. 2010. Academic non-commercial research and the international ABS negotiations: The SCNAT contributions. In: Access to Genetic Resources & Sharing of Benefits – ABS Program 2003 to 2010. Swiss Academy of Sciences, Bern, Switzerland, pp 15-22. Available at http://abs.scnat.ch/downloads/documents/ABS_Report2003-2010_SCNAT_web.pdf (accessed 10/11/2013)

Scientists also have to adhere to scholarly standards. In order to receive research funding, they have to generate high-quality scientific knowledge and to publish their findings in peer-reviewed scientific journals. Publishing has to happen in a timely manner and to disclose enough information, so peers can assess its validity. Researchers also have to record and store collected data and analyses for many years, and they are asked to submit information (including genetic) to appropriate databases in order to make them accessible to the scientific community for further research or verification. Unique or novel biological material is to be submitted to repositories (culture collections, herbaria, museums, botanical and zoological gardens, etc.) to facilitate access for other researchers.

As soon as information is publicly available (e.g. through publications) no intellectual property rights can be claimed. Dissemination could be delayed when research institutions or researchers decide to pursue patent protection on research findings (cf. case in Colombia (CO2); **Annex 2**). Once published, information can be used by others even outside the academic community and in an expanded geographic area (from local to global; from a grassroots approach to a highly technological approach). If further R&D by a third party – e.g. an industrial company – based on the published results, leads to an invention, this third party can apply for a patent.

So, scientists play a pivotal role as intermediaries between the various stakeholders involved in the process to value biological resources. By doing research – from data collection through data analysis and publication of the results – they transform information and transmit it along what is called the 'value chain' (i.e. the process leading from raw materials to an end product, adding value at each step by innovation, processing, etc.).

4. THE ACADEMIC RESEARCH PROCESS

In order to better understand and assess the above-mentioned role of academic research as intermediaries in the innovation and value chain, it is important to understand the academic research process in more details. In particular, in the context of implementing Article 8 (a) NP, it may be helpful to be familiar with the research steps that potentially lead to a commercial product, and to contrast this to non-commercial research. This needs to be done against the backdrop of the ultimate goal of the ABS system – to share benefits to contribute to the conservation and sustainable use of biodiversity.

4.1 Types of research

There are two ways in which research can contribute to the goal of benefit-sharing and biodiversity conservation. Firstly, there is academic research undertaken for a purely non-commercial, scientific goal such as testing hypothesis, theories or laws with no application or use for commercial ends in view. This type of research (also referred to as basic research) is an important player in the effort to conserve biodiversity because it seeks the knowledge needed to find solutions. It also adds value to the genetic resources by assessing the potential for using or creating services and products useful for society. Typical non-commercial academic studies on genetic resources and/or ATK are taxonomy and systematics, inventories, conservation biology, ecology, biogeography, population biology, functional and community ecology, as well as ethnobotanical studies (cf. case in Bolivia (BO); **Annex 2**). They are characterised by developing in cycles – a research cycle ending with the publication of the results that make them publicly accessible. A possible next research cycle would then build on these results, as well as, for instance, activities for conservation and sustainable use as carried out by governments, NGOs and other stakeholders. Thus, this type of research, that as a rule is publicly funded, is not oriented to obtain monetary benefits.

Second, there is the research that is undertaken in the context of R&D for commercial ends. This type of research may in some cases lead to monetary benefits by private users and governments that are to be shared with the providers of the resources to support conservation of biodiversity or – in case of the involvement of ILCs – their livelihoods. This commercially-oriented type of research is hardly ever independent from the research described above as it may take up the results of academic non-commercial research in several ways: (i) publicly available information such as scientific publications generated in an academic non-commercial research project is accessed and used in a commercial context for example in ethno-pharmaceutical information

(cf. case in Ecuador (EC); **Annex 2**); (ii) a research project produces results that will be further investigated in commercially oriented R&D (change of intent) by university institutes or joint ventures (e.g. discovery of potential for biofuel, biofertilisers, bioremediation, new antibiotics in microorganisms originally investigated in a purely ecological context) (cf. cases in Mexico (ME), Colombia (CO2) and Brazil (BR1-4)[20]; **Annex 2**); (iii) genetic resources or genetic information are transferred to a third party that develop commercial applications.

It is because of these latter scenarios (i-iii) that there has been widespread concern that access for non-commercial use may lead to commercialisation of the resources and research findings without fair and equitable benefit-sharing. Yet, it is essential to recognise that there is no research for commercial ends without a foundation in basic research. So, making access for non-commercial research overly complicated may produce unwanted repercussions also on the commercially-oriented R&D, and, ultimately, on the generation of monetary benefits themselves.

4.2 Sharing benefits resulting from research

The sharing of benefits is an essential element of the CBD. At the outset of the CBD, the rationale of its ABS system was (and still is) to provide a means to share the costs as well as the benefits of biodiversity conservation between developed and developing countries. The resulting bilateral solution of ABS is the result of the divergent interests of developing and developed countries throughout the negotiation of the ABS system.

Accordingly, the approach and scope of the ABS system was in the first instance an *international* one, as is underlined by the following comment by Vicente Sánchez, chairman of the International Committee negotiating the CBD: "we succeeded in delivering a convention which delicately balances on conservation of genetic resources, technological development, regulated access to genetic resources and *international* equity"[21] (emphasis added by authors).

The situation highlighted in the case studies referenced in this document (**Annex 2**) and the discussion that took place at the Science-Policy workshop (cf. **Preface**) presents another focus: for the most part, they deal with situations of access of national researchers in their own country. They feature only in part elements of international cooperation mostly in sectorial aspects and/or to resolve specific questions or to provide for technical support (cf. the cases in Colombia (CO1) and Brazil (BR4); **Annex 2**).

The difference between the international approach set out in the CBD and the NP, and the national focus of ABS systems in LAC countries became more salient in the discussion of the desirability of the benefits listed in the Annex of the NP. It became evident that the focus on international exchange and economic benefits generated by ABS for commercial ends shows at most half of the story. *Non-commercial research results in non-monetary benefits that are of tremendous value on the national and local levels too* (e.g. capacity building, new infrastructures, information and educational documents; **Annex 3**), so transparency regarding these benefits is essential when arguing for facilitated access for non-commercial research. We flag this national dimension of the ABS system as an area that deserves greater scrutiny[22].

4.3 Take-home message

It is clear that multiple benefits result from academic non-commercial research that are indispensable for a sound and sustainable development of a country. Therefore, it is reasonable to encourage this type of research and to facilitate its access to genetic resources. Given this argumentation, and in order to also secure sharing of benefits in the case of a transition of the research results and the genetic resources into the commercial domain, flanking measures are necessary. These encompass clear, transparent and well-communicated procedures in the case of a change of intent, and a streamlined system of efficient and strategically well-designed instruments to monitor compliance.

20. In Brazil, this kind of research is defined as "scientific research" and no PIC and MAT are needed.

21. See CBD News Special Edition. The Convention on Biological Diversity – from Conception to Implementation. Historical perspectives on the occasion of the 10th Anniversary of the entry into force of the Convention on Biological Diversity. CBD UNEP 2002, pp 5. Available at www.cbd.int/doc/publications/CBD-10th-anniversary.pdf (accessed 15/04/2014); and Greiber, T., S. Peña Moreno, M. Åhrén, J. Nieto Carrasco, E.C. Kamau, J. Cabrera Medaglia, M.J. Oliva and F. Perron-Welch in cooperation with N. Ali and C. Williams. 2012. An Explanatory Guide to the Nagoya Protocol on Access and Benefit-sharing. IUCN, Gland, Switzerland, pp 65. Available at https://cmsdata.iucn.org/downloads/an_explanatory_guide_to_the_nagoya_protocol.pdf (accessed 15/04/2014)

22. Nemogá-Soto, G. R. D.A. Rojas Días and O.A. Lizarazo Cortes. 2014. Investigación de la biodiversidad en países megadiversos: estrategias para alianzas científicas y técnicas. In: Ríos, M. and A. Mora (Eds.). Acceso a Recursos Genéticos en América Latina y el Caribe: Investigación, Comercialización y cosmovisión indígena. UICN-PNUMA/GEF-ABS-LAC. Pp. 12-42.

5. FACTORS SUPPORTING A SUCCESSFUL ABS PROCESS

In order to define favourable conditions for the implementation of the ABS process, some of the case studies and elements of national implementation were discussed at the Science-Policy workshop to stimulate new reflection and the sharing of experiences on such conditions. They are presented below (we refer to **annexes 2 and 4** for further information on case studies and national implementation respectively).

Resulting insights were, first, that the implementation of the ABS system is challenging legally and administratively; and, second, that all stakeholders involved need to partake in and to contribute to the process if it is to be successful. The presentation of the results takes up this structure.

5.1 Organisational/institutional implementation of the ABS system

ABS POLICY FRAMEWORK

The implementation of the ABS system is a complex, cross-cutting issue, involving heterogeneous stakeholder groups, i.e. governmental agencies, policy makers, researchers, ILCs and other users of biodiversity. This situation calls for a holistic, integrative ABS policy and framework that takes account of the R&D process. Such a framework ought to put into perspective the necessary regulatory measures, the organisation of implementation agencies, adequate procedures and initiatives for inter-stakeholder communication and capacity-building.

Mexico is developing a legal and institutional ABS framework in an integrative process to replace its current applicable laws enacted prior to the ratification of the NP. The process, planned for the next four years, has strengthened the national capacity and conditions for ABS implementation.

BUILDING MUTUAL UNDERSTANDING AND TRUST

Such an integrative approach helps building bridges of understanding and collaboration between stakeholders through their involvement in relevant planning and decision-making processes and their sharing of experiences. It provides space for open communication between researchers and policy makers that is needed to build mutual understanding of their respective needs and concerns and to foster mutual trust.

Empowering school kids of Cuatro Ciénegas Coahuila to save the wetland, visit at UNAM lab (case ME), Mexico © Luis Eguiarteto

In Bolivia, very strong ILC organisations participate in ABS decisions on legislation and cases of access. At present the indigenous social organisations are working on laws which include practical mechanisms for access to collective territories and on a concept of collective intellectual property for traditional knowledge.

INSTITUTIONS, ORGANISATIONS

The institutional, administrative arrangements supporting this integrative framework need to rely on inter-sectorial awareness and integration that satisfies all governmental sectors (e.g. agriculture, environment, technology, health, trade).

Brazil has established a unique, integrative agency, CGEN (Genetic Heritage Management Council) to grant authorisation for access to genetic resources and ATK. It is constituted by representatives from 9 ministries and 10 federal organisations including federal research institutions and organisations that represent traditional communities.

CAPACITY BUILDING

Capacity building of all the stakeholders in the ABS process is needed, so all groups acquire a clear understanding of ABS legislations and procedures. In addition policy makers, governmental agencies and ILCs need to understand the mechanisms and goals of academic non-commercial research and the benefits it generates.

ECONOMIC RESOURCES

In order to establish a sound ABS framework and to comply with the requirements of the NP, the necessary economic means need to be allocated to the respective activities. These funds should be considered as an investment for the generation of future benefits resulting from the use of genetic resources.

Mexico has been funded by the Global Environment Facility (GEF) and the German Technical Cooperation Agency (GIZ) to create an ABS framework and associated capacities of national authorities (www.thegef.org/gef/project_detail?projID=5738).

LEGISLATION

Existing ABS legislations in LAC countries frequently contain rules for access for commercial ends only. Yet, the absence of differing procedures between access for non-commercial research and access for commercial research, or complicated procedures for non-commercial research can deter researchers from undertaking research or lead to illegitimate access.

Such legislations need to be revised and supplemented by sound, simple and flexible ABS rules, establishing specific, easy but controllable procedures for non-commercial research that take into account the *reality* of what research is about and that avoid unnecessary bureaucracy and complexity.

The Brazilian system establishes different procedures for non-commercial and for commercial research. Currently there is a fast online electronic system for authorisations for scientific research (non-commercial research), and for bioprospecting and technological development (commercial research). The authorisations for bioprospecting and technological development involve obtaining PIC and MAT. Access for basic research, such as epidemiology, taxonomy, phylogeny, inventories, conservation biology, ecology, biogeography, population biology, functional and community ecology do not fall under the ABS legislation.

The integrative approach described earlier should be operationalised to support the legislatory process.

Costa Rica, Mexico, Cuba and Brazil have started such an integrative revision process. Hence, in Costa Rica, there is a single agency to apply to – CONAGEBIO – that evaluates the applications and issues permits.

ELEMENTS TO INTEGRATE INTO LEGISLATION

It is fundamental that the laws are based on clear definitions, regulate access for non-commercial research, stipulate procedures for cross-cutting issues such as exchange of biological material for taxonomic studies and change of intent, and create instruments for monitoring and controlling in view of a possible commercialisation.

ATK cannot be protected by the existing intellectual property rights. The lack of proper protection might deter holders of ATK to share their knowledge and thus make research difficult. Therefore, it is essential to develop *sui-generis* protection of TK.

Peru has a law that establishes a special protection regime, for the collective knowledge of indigenous peoples that is associated to biological resources, within the intellectual property framework[23].

ADMINISTRATION AND PROCEDURES

ABS frameworks should facilitate work on biodiversity by clarifying procedures and criteria for issuing permits and contracts, functional for national, regional and international levels, and for the needs of different research types. This assumes a working understanding of differences of research types by the authorities involved in the ABS procedures (cf. **4.2**). Moreover, focal points should provide guidance to researchers on how to comply with access regulations.

23. Peru Ley N° 27811, del 24 de julio de 2002, mediante la cual se establece el régimen de protección de los conocimientos colectivos de los pueblos indígenas vinculados a los recursos biológicos (Law No. 27811 of 24 July 2002, introducing a Protection Regime for the Collective Knowledge of Indigenous Peoples derived from Biological Resources). Available at www.wipo.int/wipolex/en/details.jsp?id=3420 (accessed 15/04/2014)

Botanical specimens at herbaria, Bolivia © Mónica Moraes

As complex access procedures are bound to be counterproductive the ABS system should strive to streamline application processes also in more complex situations, such as in areas where ILCs or several administrative levels are involved.

Colombia in 2012 has considerably simplified the administrative formalities and permits required for access for non-commercial research. Hence, the special Group on Genetic Resources appoints specialised officers who deal with applications and there are now just 2 types of permits: one to collect samples and one to send material abroad.

FORMALITIES AND PERMITS

Formalities ought to be simplified to redress the current and frequent situation of a series of permits being required for doing research legitimately. In particular, the formalities for exchange between peers (between collections, including for international cooperation) and for *ex-situ* access need to be kept at a minimum as they are essential activities of research.

Simplified formalities in LAC exist in Cuba and Costa Rica with one permit for collection, transport and exportation; in Brazil, Cuba and Costa Rica whose systems grant multiple-year authorisations; and in Ecuador with one permit for all provinces.

MONITORING AND CONTROL

Monitoring and control measures (e.g. the enforcement of the obligation to disclose the origin of a resource) provide a counterbalance to simplified access for non-commercial research and build trust that in case of commercialisation benefits are shared. They rely on establishing effective checkpoints done by patent offices, universities, sanitary authorities, etc.

In Brazil, the patent is granted only if it is proved that the product or process developed using Brazilian resources was obtained from a project with an access authorisation. Similar provisions were introduced in the Andean Community countries under Decision 486 of 2000, the common regimen on Intellectual Property Rights.

MONITORING AND CONTROL IN INTERNATIONAL COOPERATION: BRIEF OVERVIEW OF SWISS AND EUROPEAN UNION (EU) SYSTEMS

Council and Parliament of the EU and the Swiss Parliament have each recently adopted regulation to adopt the NP and to implement the obligations regarding monitoring and control[24]. Both base their measures on users' due diligence encompassing the following obligations:

- Access performed in accordance with the host countries' requirements;
- Provide access information to subsequent users;
- User compliance with the due diligence obligation is monitored at the moment of market authorisation or commercialisation of a utilised genetic resources or ATK. If the due-diligence obligations are not complied with, the user has to provide for subsequent compliance or to abstain from the utilisation.
- The competent authorities have the competence to randomly check users' compliance. According to the Swiss law, the focus lies on cases of alleged violation of the due diligence and notification requirements.
- The EU regulation further includes a system of trusted collections.

24. EU: Regulation (EU) No 511/2014 of the European Parliament and of the Council of 16 April 2014 on Access to Genetic Resources and the Fair and equitable Sharing of Benefits Arising from their Utilization in the Union. Available at http://ec.europa.eu/environment/biodiversity/international/abs/index_en.htm (accessed 11/06/2014). Switzerland: Amendment of the Federal Act on the Protection of Nature and Cultural Heritage. Available in a non-official English translation at http://www.cbd.int/abs/doc/SwissRatification_of_the_NP-Draft_legal_measures-10_April_2013.pdf (accessed 11/06/2014).

5.2 Favourable conditions and opportunities along the research process

CERTIFICATION OF INSTITUTIONS

One way to promote mutual trust is to make visible institutions that work according to the ABS principles. This could be a volunteer certification process or an ISO-like system provided by a trustable non-for-profit organisation.

In the case of large institutions such as universities the requirements may include the implementation of institutional policies, the designation of a body or office in charge of ABS negotiations and the adoption of good practices for their researchers.

Brazil and Colombia have systems to certify *ex-situ* collections (trusted collections). The University of Costa Rica (Universidad de Costa Rica) has an office in charge of ABS.

ACCESS

Research institutions and universities need to build their own awareness on their access obligations and of the ABS systems of respective countries. It is also desirable to create toolkits for access to collections and uniform Material Transfer Agreements for exchanges between the collections, and to promote the open exchange and sharing of data whilst arranging for different levels of security according to the natural resources accessed.

RESEARCH WITH ILCS

If ILCs are involved, the researchers have to ensure their PIC and MAT and empower the ILCs to take part in some of the research activities (cf. the case of Mexico (ME) and the case of Bolivia (BO); **Annex 2**). In working with ILCs and local authorities, it is important to avoid breaking trust by malpractices or by raising false expectations regarding potential economic benefits of the research. Social and scientific organisations might provide guidance in organising a good working cooperation.

REPORTING AND AUDITING OF THE RESEARCH

Excessive reporting duties on the advances of the project tend to be counterproductive. It might be favourable to base reports to the focal point on an agreed-upon brief format. Adequate and streamlined auditing mechanisms for complex projects are part of trust-building between the involved stakeholders. Criteria for the application of auditing mechanisms need to be defined and the mechanisms developed. The scientific network can give technical support for developing and establishing such mechanisms.

PUBLICATION OF RESEARCH AND RIGHTS TO INTELLECTUAL PROPERTY

Scientists' duty to publish research results in scientific journals may enter into conflict with the potential to patent innovative results. Researchers therefore need qualified legal advice on intellectual property rights regarding dissemination and academic publication. Moreover, appropriated provisions (in the MAT) should clarify the researcher's obligations to notify the granting authority about the decisions to file for patent protection, when applicable.

In publishing, the rights of holders of ATK need to be respected and publication of ATK should follow the provision of the PIC. To further acknowledge the holders of ATK, they may be included in the authorship of the publication.

STORAGE OF RESOURCES

Scientists have to record and store collected data for many years and to submit information to appropriate databases. Therefore the competencies of national repositories for long-term safeguarding of collected data and for facilitating access within the provision of the NP for future research need to be strengthened.

CHANGE OF INTENT

It is worthwhile to foster a change of intent since it increases the potential of generating economic benefits. One way to do this is to streamline procedures for ABS-negotiation of MAT and establish agencies of Technology Transfer to help in questions of intellectual property rights and in the negotiations between university and industry.

Argentina, Cuba, Ecuador and Brazil have Technology Transfer units. In Brazil, any university or research institution has to have a Technological Innovation Center (Núcleo de Inovação Tecnológica – NIT) that is responsible for helping researchers to comply with the ABS legislation, regarding the technology transfer to industry as well any issue regarding patent application.

The trigger for notification of a change of intent needs to be defined and procedures clarified.

When defining rules on change of intent, it should be ensured that this option does not increase the complexity of access for academic non-commercial research.

Costa Rica and the provisional Brazilian law have regulations on change of intent. In Colombia, the

change of intent in one research project required to sign a second access contract including specific ABS negotiations (case CO2; **Annex 2**). In Mexico, a recent case of change of intent (case ME; **Annex 2**) is a precedent and triggers a change of law that does not currently address change of intent.

BENEFIT-SHARING

Benefits generated by non-commercial research are important when arguing for facilitated access. Researchers should show policy-makers, governments and private sectors concrete examples on how academic non-commercial research benefits different social groups. In addition, since many of the results generated are of public interest, it is important to share them with a wider public. Results should be accessible not only in technical but also non-technical language.

This is especially true for results of research that inform conservation and sustainable use of biodiversity. They need to be fed back to the stakeholders to further adequate decisions for biodiversity management.

When cooperating with ILCs, results of research may contribute to advance their livelihood. Part of the cooperation with them should therefore include a message convened in a clear and culturally appropriate manner about the socio-economic and other benefits they can derive from the results of research.

Finally, when sharing results with local stakeholders, besides the usual written form, videos, workshops and participative scenes could be used. In addition to this, researchers should develop their skills to provide scientific input to decision makers.

COLLABORATING WITH ILCS AND HOLDERS OF ATK

In order to promote cooperation between researchers and ILCs, awareness among all stakeholders about the significance of ATK for biodiversity conservation and sustainable use needs to be raised. To this end, the mutual understanding of the complexity and principles of both, the indigenous and the scientific knowledge systems needs to be fostered.

It would prove highly valuable that requests from the communities are taken up in research as joint ventures. It would also be helpful if ILCs define the procedures they wish to see followed for access on their territories, also taking account of the specific requirements of academic research.

In Costa Rica and Bolivia ILCs have been asked to devise and formulate the procedures for access to traditional knowledge. Therefore, at present, no permits for access to ATK are granted.

Traditional authorities Wiwa in Dibulla, La Guajira, Colombia © Carlos Baquero

COOPERATION

In cases of genetic resources and ATK shared between countries or between ILCs, the heterogeneity of cultures and policies needs to be bridged on a case-by-case basis by establishing bilateral cooperation and agreements for equitable sharing of benefits.

Quinoa originates from Ecuador, Chile and mostly from Bolivia. The question of its consumption in the world has launched discussions on how to change access regulation to foster international collaborative research that improves varieties while not foregoing commercial benefits for Bolivia. The discussions also explore how to share equitable benefits with Peru, Ecuador and Chile. www.quinuainternacional.org.bo/

Established scientific cooperation at the regional or international level might prove valuable for access to shared resources and knowledge, to enhance national or regional capacities and for the exchange of specimens, expertise, technology and lessons learned (e.g. the Swiss-Brazilian case on international cooperation (CH-BR); **Annex 2**).

International cooperation and benefit-sharing might be included in the ABS strategy in order to decide on a strategic level on related measures, such as prioritising research types and benefits according to the research and social needs of each country; streamlining application procedures, and building capacities of institutions, research centres and governments for the negotiation of projects, agreements and contracts. An essential requirement would be to overcome the prevalence of the distinction between the global north and the global south existing in some organisations by strengthening the capacity and the willingness to understand the cultural and institutional framework in other countries.

6. CONCLUSIONS

Human well-being is dependent upon the persistence of biodiversity. It is therefore crucial that both economic means and profound knowledge of biodiversity are available and used to halt its escalating loss. The NP, through its benefit-sharing mechanism, offers options to generate both. Here, academic non-commercial research on biodiversity provides leverage in two different ways.

First and foremost, the results of biodiversity research provide the necessary knowledge basis for taking sound measures on the management and sustainable use of biodiversity. Scientists are eager to contribute in such a way to maintaining biodiversity as a public good and heritage of the peoples. This document offers a series of impressive examples of such contributions and illustrates the many non-monetary benefits shared by academic research. Such benefits are multi-faceted and not necessarily obvious but happen on different levels: from mere exchanges of ideas between researchers and ILCs to producing an information brochure for the local communities, to providing infrastructures and related capacity building to local institutions (**Annex 3**).

Secondly, in some cases, results of academic non-commercial research might be of interest for R&D. Such a development can take place as change of intent directly subsequent to the non-commercial research or as independent research at a much later stage. This opens the option to develop products with commercial potential providing a basis for economic benefit-sharing and represents a second valuable outcome of non-commercial research. Moreover it illustrates the fact that there is no research for commercial ends without a foundation in academic non-commercial research.

For governments, there are therefore good reasons to invest into furthering academic non-commercial research.

To operate, and to being able to generate the described benefits, academic researchers need access to biological resources and to develop research collaboration. Such collaboration may be of an interdisciplinary-character, and/or inter-institutional (i.e. through scientific networks and strategic partnerships), on the national, regional or international level. Given these specifics, simplified access as postulated by Art. 8(a) of the NP is a crucial basis to ensure enabling conditions for academic research and for governments to assume their responsibilities in biodiversity conservation and sustainable use.

This document provides many examples to respond to the involved challenges and highlights a number of favourable conditions that would help to fully benefit of the ABS system's opportunities (**section 6**). In particular, the "fear" of a change of intent was revealed unfounded. Rather, the NP (with its monitoring and compliance obligations) provides the opportunity to develop clear and transparent rules and procedures for a change of intent and for mechanisms to monitor compliance by the commercial actors who use non-commercial research results for R&D. This is bound to increase legal security and trust also in international cooperation and provides the basis for a more equitable scientific cooperation. Further discussions and spread of ABS good practices could help improving national regulations.

The workshop made clear that the implementation of the ABS system, as specified in the NP, is challenging for all stakeholders involved. In providing the opportunity of a dialogue between policy and science, it also showed the benefits of stakeholders partaking in and contributing to the process. This dialogue was a pilot experience that has to be carried further. It showed the importance, the feasibility and the potential of an open dialogue and its potential to lead to mutual understanding and trust between the involved actors.

ANNEX 1

Participants in the Science-Policy workshop on 20-22/11/2013, Lima, Peru

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ANNEX 2

Case studies

Descriptions of the case studies are accessible on the websites of:

- DIVERSITAS, www.diversitas-international.org/activities/policy/cbd-1/access-and-benefits-sharing-abs
- SCNAT, http://abs.scnat.ch/downloads/index.php

CODE	TITLE	FIELD OF RESEARCH	COUNTRY	AUTHORS
AR	Identification of fish species by means of DNA Barcoding for biodiversity conservation	Biodiversity conservation	Argentina	Juan Martin Diaz de Astarloa
BO	Current national regulations and conditions for scientific plant collections and exchange	Botany	Bolivia	Mónica Moraes R.
BR1	Ethnobotanic study of antimalarial plants at Rio Negro's and Purus Rivers banks	Ethnobotanics	Brazil	Ana Yamaguishi
BR2	Chemical and pharmacological study of *Octocorallia* corals	Pharmaceutics	Brazil	Ana Yamaguishi
BR3	Clone, expression and purification of *Leishmania braziliensis* proteins: Use in serology and vaccine studies	Parasitology	Brazil	Renato Porrozzi de Almeida
BR4	Semi-quantitative analysis of Laccase and MnP genes expression and evaluation of dye degradation by marine-derived fungus	Applied microbiology	Brazil	Rafaella Costa Bonugli-Santos and Lara Durães Sette
CH-BR	Biogeographical studies of some submontane forests of the Mata Atlantica by increasing biological knowledge in a conservation perspective	Ecology, biogeography, conservation biology	Brazil-Switzerland	L. Nusbaumer, R. Spichiger, and P.-A. Loizeau
CO1	Establishing a platform in metagenomics and bioinformatics for the characterization and use of genetic resources from extreme environments	Metagenomics and bioinformatics	Colombia	Research Group PLEBIO
CO2	Isolation and identification of a microorganism of the genus *Lactococcus* producer of a natural polymer and exploration of its potential industrial and commercial applications	Biotechnology	Colombia	Research Group PLEBIO
CR	Conservation and Monitoring of Meso-American Orchids	Taxonomy, DNA barcoding	Costa Rica	Jorge Warner
EC	"Global Ocean Sampling Expedition" Galapagos National Park: collection activities and implementation of legislation	Microbiology	Ecuador	Research Group PLEBIO
ME	Biotechnology for conservation in Cuatro Cienegas Coahuila	Microbial evolutionary ecology	Mexico	Valeria Souza
PE	Access to *Bactris gasipaes*, "pijuayo", from the national *ex-situ* collection at INIA-Peru	Biochemistry and molecular biology	Peru	Marleni Ramirez, M. Van Zonneveld, S. Imán and M. Sigueñas

ANNEX 3

Benefits shared in the case studies

Non-monetary benefits resulting from the academic non-commercial research projects of the case studies listed in **Annex 2**.

BENEFITS	CASES
CAPACITY BUILDING AND KNOWLEDGE	
➘ Local communities (at all levels, including children) involved in field work and data entry. People trained as local field guides by being taught the scientific names of the plants and relating them to vernacular, local names of each species ➘ Local communities advised on how to use resources sustainably	BO
➘ High school students and teachers empowered to save the threatened ecosystem researched, to assess the state of local animals and plants and to monitor potential pollution of the local wells by being trained to use a molecular biological lab made available to them	ME
➘ University students sent abroad for training in molecular biology and provided with other training and teaching opportunities. University staff trained in molecular biology	CR
➘ Contribution to a major public health problem: malaria ➘ Fellowships for indigenous people who have completed undergraduate courses in Biological Sciences related areas ➘ Enhancement of local communities' self-esteem	BR1
SCIENTIFIC BENEFITS	
➘ A core collection of *Bactris gasipaes*, "pijuayo" determined	PE
➘ Production and distribution of user-friendly publications that document the uses of plants for the local communities. The communities were considered authors of these publications and researchers only as compilers of data.	BO
➘ Graduate students training in processing and analyzing genomic data and developin bioinformatic tools. ➘ Development of a platform for genomic and bioinformatics research in the country ➘ Publication of 10 articles and 5 book chapters; and 25 oral presentations ➘ Advancement of professional capacities for 16 undergraduate students, 10 masters students, 7 PhD students	CO1
SHARING INFORMATION AND RESULTS	
➘ A textbook developed for the instruction of the local communities and indigenous people on the use of antimalarial plants	BR1
➘ A public document produced for schools to raise awareness on conservation issues specific of the area studied	CH-BR
➘ A databank developed for and made available to the general public	CH-BR, ME
PROVIDING INFRASTRUCTURE	
➘ A molecular biology laboratory built for the local high school ➘ Green houses that help saving water for the community	ME

BENEFITS	CASES
INTERNATIONAL RESEARCH COOPERATION OF DIFFERENT FORMS	
➘ Cooperation between LAC institutions or cooperation of a foreign researcher (e.g. from Europe) with a LAC institution	CH-BR
➘ A cooperation established with institutions abroad for data analysis or other specific parts of the project	CO1
➘ A LAC researcher undertaking a multilateral, far-reaching research project	AR

ANNEX 4

National implementation

The countries discussed in this document have implemented the ABS system in different ways and most of them undergo processes to revise their ABS-related legislation and/or procedures. These developments mostly coincide with the adoption of the NP or its ratification but also have additional or different roots. Hence, Ecuador and Peru are implementing the Andean Decision 391, and Costa Rica the ILO Convention 169 on Indigenous and Tribal Peoples. Bolivia is aligning its ABS system with its new constitution and ensuing legislation. Mexico, on the other hand, ratified the NP and is creating an ABS regime for its implementation.

Not all of the existing systems specifically consider non-commercial research. Yet, several countries present solutions that appear favourable for facilitated ABS for non-commercial research. Outstanding examples were provided in **section 5**.

In addition to the information and sources provided below, descriptions of the implementation systems of Argentina, Brazil, Colombia and Mexico are also available on the websites mentioned on page 18.

ARGENTINA Carlos Alberto Cattaneo, SAyDS	
Relation with NP	Argentina signed the NP on 15 November 2011.
Important institutions	➘ SAyDS, Secretaría de Ambiente y Desarrollo Sustentable (Secretariat of Environment and Sustainable Development), www.ambiente.gov.ar/
BRAZIL Manuela da Silva (Fiocruz), Carlos Pittaluga (CNPq) and Maria Jose (Zeze) Amstalden M Sampaio (Embrapa)	
Relation with NP	Brazil signed the NP on 2 February 2011.
Important institutions	➘ CGEN, Conselho de Gestão do Patrimônio Genético (Genetic Heritage Management Council), www2.mma.gov.br/sitio/index.php?ido=conteudo.monta&idEstrutura=222, the ABS Competent National Authority ➘ CNPq, Conselho Nacional de Desenvolvimento Científico e Tecnológico (National Council for Scientific and Technological Development), www.cnpq.br/ ➘ Embrapa, Empresa Brasileira de Pesquisa Agropecuária (Brazilian Agricultural Research Corporation), www.embrapa.br/

Important institutions	➘ Fiocruz, Fundação Oswaldo Cruz (Oswald Cruz Foundation), http://portal.fiocruz.br/ ➘ Ibama, Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (Institute of Environment and Renewable Natural Resources), www.ibama.gov.br/ ➘ IPHAN, Instituto do Patrimônio Histórico e Artístico Nacional (National Institute of Historical and Artistic Heritage environmental ministry), http://portal.iphan.gov.br/
Essentials of the ABS implementation process	In Brazil, ABS is regulated by the Provisional Act 2186-16 of 2001, mainly its articles 8j and 15, and by five Decrees. The Provisional Act also established the Genetic Heritage Management Council (CGEN) within the Ministry of the Environment as the ABS national competent authority. It is constituted by representatives from nine ministries and 10 federal organisations, including federal research institutions and organisations that represent traditional communities. CGEN has the mandate to grant prior authorisation for the access to genetic resources and ATK for the purpose of scientific research (non-commercial research), bioprospecting and technological development (commercial research). Authorisation is granted only to Brazilian institutions that perform R&D in biology and related areas. Foreign institutions must join a Brazilian institution, which, for all legal purposes, will be responsible for access. In the case of bioprospecting and technological development, the PIC from public and private providers is required, including from ILCs. When there is an economic potential from the use of genetic resources and ATK, MAT must be signed by provider and user and it has to be approved by CGEN. To increase its capacity for managing the ABS system, the CGEN accredited three institutions to grant permits: the National Council for Scientific and Technological Development (CNPq), the Brazilian Institute of Environment and Renewable Natural Resources (Ibama) and the National Historic and Artistic Heritage Institute (IPHAN). CNPq developed an efficient electronic system for issuing permits for both commercial and non-commercial proposals. The Brazil Provisional Act on Genetic Heritage and Traditional Knowledge (No. 2.186-16, dated August 23, 2001) provides regulation for a change of intent (Art. 16, paragraphs 5, Available at www.mma.gov.br/estruturas/sbf_dpg/_arquivos/mp2186i.pdf (accessed 15/04/2014)
Statistics of ABS contracts	➘ 1000 permits for non-commercial research since 2003 ➘ 90 contracts for commercial research since 2003
For more information	➘ www.mma.gov.br/patrimonio-genetico/conselho-de-gestao-do-patrimonio-genetico/normas-sobre-acesso ➘ www.cnpq.br/web/guest/acesso-ao-patrimonio-genetico ➘ http://carloschagas.cnpq.br/ ➘ www.ibama.gov.br/servicos/acesso-e-remessa-ao-patrimonio-genetico ➘ www.mma.gov.br/patrimonio-genetico/conselho-de-gestao-do-patrimonio-genetico

BOLIVIA

Sharbel Gutierrez, MMAyA

Relation with NP	Bolivia has not signed the NP. Government and indigenous social organisations are analysing and discussing the possible ratification.
Important institutions	➘ MMAyA, Ministerio de Medio Ambiente y Agua (Ministry of Environment and Water), www.mmaya.gob.bo/, the ABS Competent National Authority ➘ INIAF, Instituto Nacional de Innovación Agropecuaria y Forestal (National Institute for agriculture and forest innovation), www.iniaf.gob.bo

Essentials of the ABS implementation process	Bolivia (Estado plurinacional de Bolivia) has a new constitution that respects the autonomy of decentralised entities since 2010. In every region, very strong ILC organisations participate in ABS decisions on legislation and cases of access. At present the indigenous social organisations are working on laws which include practical mechanisms for access to collective territories. Also, they work on a concept of collective intellectual property for traditional knowledge. In order to apply the Law on the Rights of Mother Earth (Ley de Derechos de la Madre Tierra, Ley 071, 21 Diciembre, 2010) and the Framework Law for Mother Earth and Holistic Development to Live Well (Ley Marco de la Madre Tierra y Desarollo integral para vivir bien, Octubre 2012) Bolivia assumes the importance of the principle of No Commodification, meaning that systems of life and the processes that support them cannot be commoditised, nor can they become anyone's private property.
Statistics of ABS contracts	➘ 10 access contracts granted out of 50-60 applications between 2000 and 2005 ➘ several related to quinoa and Andean crops ➘ 2 were for commercial purposes

COLOMBIA

PLEBIO (www.plebio.unal.edu.co) and Beatriz Acevedo, MADS

Relation with NP	Colombia signed the NP on 2 February 2011.
Important institutions	➘ MADS, Ministerio de Ambiente y Desarrollo Sostenible (Ministry of Environment and Sustainable Development), www.minambiente.gov.co/, the ABS Competent National Authority ➘ Authorities depending upon location of resources
Essentials of the ABS implementation process	The Andean Decision 391 for access to genetic resources (ARG) is being operationalised in Colombia with notorious improvement. The MADS established a special Group on Genetic Resources with specialised officers to deal with ARG applications. Although improvements still are required, the average time for getting a contract on several cases during the last years has been reduced to 5 months and the communications between researchers and authorities is more fluid and efficient. Additionally, since 2012 the Colombian system for permit application has been simplified regarding collection of biological material for non-commercial research. There are 2 types of permits: one to collect samples (Decree 1376 of 2013) and one to send material abroad. If a collection of samples is located in a single province, the environmental regional authority grants the permit. If the sample collection covers more than one province the MADS processes the permit. Colombian or international researchers need a national partner as National Institutional Support when submitting an application to access genetic resources or by products. The Decree 1375 of 2013 regulates registration of sample collections as certified collection. Collections of biological samples need to be registered with the "Institute von Humboldt". Samples resulting from research need to be stored in such a certified collection.
Statistics of ABS contracts	➘ 90 contracts granted out of 199 applications from 2003 to 2013 ➘ 1 contract was for commercial research
For more information	➘ www.minambiente.gov.co//contenido/contenido.aspx?catID=1355&conID=8734 ➘ www.minambiente.gov.co/documentos/normativa/decreto/dec_1376_270613.pdf ➘ www.minambiente.gov.co/documentos/normativa/decreto/dec_1375_270613.pdf

COSTA RICA

Marta Liliana Jiménez Fernández and Melania Muñoz, CONAGEBIO

Relation with NP	Costa Rica signed the NP on 6 July 2011.
Important institutions	➘ CONAGEBIO, Comisión Nacional para la Gestión de la Biodiversidad (National Commission for Biodiversity Management), www.conagebio.go.cr/ with instrumental legal identity as a decentralised organ of MINAE, Ministerio de Ambiente y Energía (Ministry of Environment and Energy), the ABS Competent National Authority.
Essentials of the ABS implementation process	CONAGEBIO is the national authority that evaluates the applications and issues permits. Among its functions, CONAGEBIO must formulate national policies, strategies and legislation relating to the conservation, sustainable use and restoration of biodiversity, access to genetic and biochemical resources and ATK, in order to ensure adequate scientific and technical transfer and the proper distribution of the benefits. CONAGEBIO will perform its agreements and resolutions and instruct its procedures by means of the Executive Director of the Technical Office. The Technical Office serves as a hub and information platform on ABS. There is the obligation under the Costa Rican legislation to notify a change of intent and make a new contract. According to ILO Convention 169 and the Costa Rican Biodiversity Law (articles 83-85) ILCs have to decide about how they grant PIC and MAT. These procedures have not been established yet. Therefore, no permit on access to traditional knowledge or genetic resources in indigenous territories has been granted yet.
Statistics of ABS contracts	➘ 301 permits granted for basic research for access to GR from 2004 to March 2014 ➘ 49 permits granted for bioprospection for access to GR from 2004 to March 2014
For more information	Biodiversity Law ➘ www.pgrweb.go.cr/scij/Busqueda/Normativa/Normas/nrm_texto_completo.aspx?param1=NRTC&nValor1=1&nValor2=39796&nValor3=74714&strTipM=TC (access *ex situ*, see CONAGEBIO) ➘ www.pgrweb.go.cr/scij/Busqueda/Normativa/Normas/nrm_texto_completo.aspx?param1=NRTC&nValor1=1&nValor2=59811&nValor3=66978&param2=1&strTipM=TC&lResultado=1&strSim=simp

CUBA

Jorge Álvarez Álvarez and Teresa Dolores Cruz Sardiñas, CITMA

Relation with NP	Cuba has not signed the NP.
Important institutions	➘ CITMA, Ministerio de Ciencia, Tecnología y Medio Ambiente (Ministry of Science, Technology and Environment), www.medioambiente.cu/
Essentials of the ABS implementation process	The Law Number 81, 1997 *"Law of the Environment"* regulates in Article 85 that the access to genetic resources is the object of special protection by the State. This includes the establishment of rigorous mechanisms of regulation, control, and management to guarantee conservation and rational use of genetic resources. In the same sense, the Article 87C establishes that CITMA, in coordination with the Ministry of Agriculture and other competent agencies and bodies, will establish regulations that condition, restrict, or prohibit the exportation of species of animals, plants, or microorganism insuring the just and equitable participation of the Cuban State in the benefits that may be derived from the use of its genetic resources.

Essentials of the ABS implementation process	All natural and legal person requires a permit granted by the Center of Environmental Inspection and Control (Cuban environmental national regulatory authority) to get the right to undertake scientific research related to genetic resources. In the cases that are involving a foreign natural or legal person the permit is granted by the Minister of Science, Technology and Environment, prior the consent of the Center of Environmental Inspection and Control. The parties involved in the access to genetic resources (foreign natural or legal person) has to sign a contract to establish all the arrangements related to the Fair and Equitable Sharing of Benefits of use the genetic resources. These contracts require the approval of the Center of Environmental Inspection and Control.
Statistics of ABS contracts	➘ 20-30 permits granted per year since 2008 ➘ 2-3 denied each year ➘ 5 contracts only applicable for international partners granted since 2008
For more information	➘ Resolution Number 34/1996 adopted by the Ministry of Science, Tech. & Environment "Regulations for the Assessment and Approval of scientific expeditions, researches and visits with environmental interest". ➘ Resolution Number 111, 1996 adopted by the Ministry of Science, Tech. & Environment "Regulations about the Biological Diversity"
ECUADOR Wilson Rojas and Cristina Alexandra Quiroga Lozano, Ministerio del Ambiente	
Relation with NP	Ecuador signed the NP on 1 April 2011.
Important institutions	➘ Ministerio del Ambiente (Ministry of Environment), www.ambiente.gob.ec/
Essentials of the ABS implementation process	Research permits exist since 30 years in Ecuador. The Ministry of the Environment is currently revising the law for academic research to adapt to contemporary research techniques. The authorisation process still needs to be mainstreamed with access permit. In 1996 Ecuador ratified Decision 391 (Common Regime on Access to Genetic Resources) of the Andean Community. It was promulgated (declared regulation for Access to Genetic Resources for Ecuador) in 2011 (Decreto Ejecutivo No 905). Permits under this new access regulation have started to be granted in 2013. The government still needs to define the framework for the sharing of benefits, in particular on the level of the decision makers.
Statistics of ABS contracts	➘ 19 applications received since 2011 ➘ 1 commercial contract negotiated in 2013
For more information	➘ http://web.ambiente.gob.ec/?q=node/23 ➘ www.ceda.org.ec/wp-content/uploads/2014/04/1-biodiversidad_recursos_geneticos_una_guia_para_su_uso_acceso_en_el_ecuador.pdf ➘ www.ceda.org.ec/wp-content/uploads/2014/04/10-reglamento_regimen_comun_sobre_acceso_a_los_recursos_geneticos.pdf
MEXICO Elleli Huerta Ocampo, CONABIO, and Norma Munguia, SEMARNAT	
Relation with NP	Mexico signed the NP on 24 February 2011 then ratified it on 16 May 2012.
Important institutions	➘ SEMARNAT, Secretaría de Medio Ambiente y Recursos Naturales (Ministry of Environment and Natural Resources), www.semarnat.gob.mx/

Essentials of the ABS implementation process	Mexico's current applicable laws were enacted prior to the ratification of the NP. In the legislation in force a slight idea about issues related to the use or utilisation of genetic resources is present in around 11 laws and one regulation *on scientific collection of biological material of flora and fauna and other genetic resources in the country*. The process and projects being implemented in Mexico have been strengthening the national capacity and conditions for ABS implementation. For instance change of intent is not covered by the law in Mexico, but one project (case in Mexico (ME); **Annex 2**) was a precedent and will steer a change in the law. Yet, it is still necessary to develop a legal and institutional ABS framework, to define special measures as the issue is legally dispersed and adjustment is needed, based on a strategic planning, in the short, medium and long term. Such a process is at present underway and planned for the next four years.
Statistics of ABS contracts	➘ 4238 permits for scientific collection granted between 1996 and 2011 ➘ very few applications denied
For more information	➘ www.conabio.gob.mx/institucion/cooperacion_internacional/doctos/acceso_recursos_geneticos.html

PERU

Karina Ramirez, MINAGRI

Relation with NP	Peru signed the NP on 5 April 2011.
Important institutions	➘ MINAM, Ministerio del Ambiente (Ministry of Environment), www.minam.gob.pe/ ➘ MINAG, Ministerio di Agricultura y Riego (Ministry of Agriculture), www.minag.gob.pe/, the ABS Competent National Authority. ➘ PRODUCE, Minsterio de la Producciòn (Ministry of Prodcution), www.produce.gob.pe/ ➘ Instituto Nacional de la Defensa de la Competencia y de la Protecciòn de la Propriedad Intellectual (INDECOPI)
Essentials of the ABS implementation process	Since the new legislation of the application of Dec. 391 of the Andean Pact in 2008, three ministries are responsible for implementing ABS in Peru: the ministry of environment that issues the guidelines and the ministry of agriculture and the ministry of industry that implements them. Before there were two types of procedures: a simple permit (for taxonomy, collection) and a contract for bioprospecting. Now for all types of access, including basic research, a contract is needed. Know-how for the application of this regulation is still under development. Peru has a *sui-generis* intellectual property right on traditional knowledge and a system for registration of traditional knowledge (with INDECOPI). There is also a National Commission for the Prevention of Biopiracy whose objective is to prevent illegal access and appropriation of genetic resources and traditional knowledge.
Statistics of ABS contracts	➘ 10 contracts granted out of >30 applications since 2009 (issued in 2013) ➘ no contract for commercial purposes granted ➘ 180 research permits for biological resources granted ➘ some permit applications from 2009 are still being processed in 2013-2014

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