

A Review of Access and Benefit Sharing (ABS) of Genetic Resources and Associated Traditional Knowledge in Ethiopia: Status, Trends and Lessons Learned

Review article

Mihertu YF*

Ethiopian Biodiversity Institute, Harar Biodiversity, Harar, Ethiopia

***Corresponding author:** Yenehayu Fentahun Mihertu, Ethiopian Biodiversity Institute, Harar Biodiversity Center, Harar, Ethiopia, Tel: +251912857979; E-Mail: yeneayehu07@gmail.com

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Abstract

Ethiopia has ratified the Convention on Biological Diversity (CBD) and International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) as well as adopted African Model Law and Bonn Guidelines. And based on these laws, the Institute of Biodiversity Conservation (IBC) is the Competent National Authority (CAN) for CBD and focal point for ITPGRFA. Access to genetic resources and the associated traditional knowledge are subjected to the Prior Informed Consent (PIC) of the concerned local community which is the custodian of the genetic resources and community knowledge. According to the laws, the PIC should be given by the concerned community directly or by provisional committee of the regional council representing different Woredas (sub-district) or Zones (districts) or if the community falls in an area in different regions, by the provisional committee of the House of Peoples' Representatives depending on their residence. After provision of PIC, the Institute of Biodiversity Conservation negotiates on Mutually Agreed Terms (MAT).

Keywords: Access and Benefit Sharing; Genetic resources; Convention on Biological Diversity; Ethiopia

Introduction

Ethiopia's status on International and National legal frame works regarding Biological resources

Ethiopia has ratified the Convention on Biological Diversity (CBD) and International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) as well as adopted African Model Law and Bonn Guidelines. After entering into these commitments, Ethiopia has issued proclamation on Access to Genetic Resources and Traditional Knowledge and Community Rights [1]. According to these laws the Institute of Biodiversity Conservation (IBC) is the Competent National Authority for CBD and focal point for

ITPGRFA. Access to genetic resources and the associated traditional knowledge are subjected to the prior informed consent (PIC) of the concerned local community which is the custodian of the genetic resources and community knowledge. According to the laws, the PIC should be given by the concerned community directly or by provisional committee of the regional council representing different Woredas (sub-district) or Zones (districts) or if the community falls in an area in different regions, by the provisional committee of the House of Peoples' Representatives depending on their residence. After provision of PIC, the Institute of Biodiversity Conservation negotiates on mutually agreed terms (MAT).

New development in the international legal framework

One of the remarkable developments in the international legal frame work in relation to the Convention on Biological Diversity is the adoption of the Nagoya Protocol on Access to Genetic Resources and Fair and Equitable Sharing of benefits arising from their utilization at the meeting of the Conference of the Parties on 29th October 2010. This is a significant advance in the convention's third objective to provide a strong basis for greater legal certainty and transparency for both providers and users of genetic resources.

Specific obligations to support compliance with domestic legislation or regulatory requirements of the party providing genetic resources and provides for user country obligations to support compliance are a significant innovation of the Protocol. These compliance provisions as well as provisions establishing more predictable conditions for access to genetic resources will contribute to ensuring the sharing of benefits when genetic resources leave a party providing the genetic resources. In addition, the Protocol's provisions on access to traditional knowledge held by indigenous and local communities when it is associated with genetic resources will strengthen the ability of these communities to benefit from the use of their knowledge, innovations and practices.

By promoting the use of genetic resources and associated traditional knowledge, and by strengthening the opportunities for fair and equitable sharing of benefits from their use, the Protocol will create incentives to conserve biological diversity, sustainably use of its components, and further enhance the contribution of biological diversity to sustainable development and human well-being.

New development in Access and Benefit Sharing activities in Ethiopia

Reengineering organizational structure for accommodating ABS issues: The Institute of Biodiversity Conservation has recently restructured its business process to accommodate different activities among which access and benefit sharing activities is the major one. According to the new structure, access and benefit sharing activities come under Genetic Resources Transfer and Regulation Directorate which is responsible for ABS implementation. The directorate is responsible for processing requests to access genetic resources for different purposes including for research and commercialization and receiving application for accessing traditional knowledge associated with genetic resources. The directorate processes both import and export request for genetic resources. Although, there have been certain cases where material transfer permit is given by some other governmental organizations, it was due to lack of awareness of the existing ABS laws and needs correction by identifying the interface. Since the directorate is also responsible for awareness creation on ABS and its implementation it has already started discussion over the matter with these organizations. Facilitation of Prior Informed Consent (PIC) and Mutually Agreed Terms (MAT) and signing of the Material Transfer Agreement (MTA) are handled by the same directorate as well.

Policies, regulations and legislations at national level: Being signatory to CBD, Ethiopia has formulated the relevant policies such as Environmental protection policy (1997), Biodiversity

conservation and Research policy (1998) and issued proclamation on Access to Genetic Resources and Community Knowledge and Community Rights [2]. Based on these frameworks, the country has been implementing the access and benefit sharing objective of the CBD. However, Ethiopia has encountered various challenges during exercising ABS agreements. It was because there was no binding international regime that ensures legal certainty, transparency, and supports compliance. The adoption and enforcement of the Nagoya protocol is believed to enhance implementation of the National ABS Laws by creating conducive environments for cooperation between parties, providing for user country obligations to support compliance, establish proper follow up mechanisms and harmonization of existing ABS legislation. That is why the country has taken a firm stand to ratify and enforce the Nagoya Protocol on 28th June 2012.

The State of Regional and International Collaborations

Regional, Sub-regional and International networks: A very large number of networks currently address one or more aspects of plant genetic resources particularly PGRFA. While all aim to promote and support collaboration among partners for a common purpose, there is a huge variations in their objectives, size, focus, geographic coverage, membership, structure, organization, governance, funding, etc.

Networks are very important for promoting cooperation, sharing knowledge, information and ideas, exchanging germplasm and for carrying out joint research and other activities [3]. They support the sharing of expertise and help compensate or provide back stopping and enable synergies to be captured. Collaboration is also critical to gaining maximum benefits under legal and policy instruments such as the CBD, GPA and ITPGRFA and to meeting associated obligations.

The objectives and working areas of the most active and prominent regional and sub-regional networks are addressed here. Ethiopia is a member to many of the networks such as EAPGREN, ANAFE and SAFORGEN represented by different institutions and has benefited considerably from such collaborations.

Eastern Africa Plant Genetic Resources Network (EAPGREN)

EAPGREN is a regional Network of National Agricultural Research Systems (NARS) of the ASARECA member countries. The Network was established to promote the sub-regional collaboration and networking through exchange of information and material, research and development, capacity building, adoption of common approaches and methods, and regional integration in plant genetic resources activities. EAPGREN has three main activity areas namely capacity building, research activities and Plant Genetic Resources (PGR) support services. Thus, Ethiopia is actively participating and benefiting from this network.

African network for agriculture, Agro-forestry and Natural Resources Education (ANAFE)

ANAFE is a network of African colleges and universities teaching agriculture and natural resource sciences. The network was launched by 17 universities and 12 technical colleges in 1993, and now has 131 member educational institutes in 35 African countries. ANAFE is

involved in curriculum development, teaching and training materials development and provision as well as in sharing information among the network members. Wondo Genet College of forestry and Natural Resources from Ethiopia is a member of ANAFE.

Consultative Group on International Agricultural Research (CGIAR)

CGIAR is a global partnership that unites organizations engaged in research for a food secure future. CGIAR research is dedicated to reducing rural poverty, increasing food security, improving human health and nutrition, and ensuring more sustainable management of natural resources. It is carried out by 15 Centers that are members of the CGIAR Consortium, in close collaboration with hundreds of partner organizations, including national and regional research institutes, civil society organizations, academia, and the private sector. In 2008 the CGIAR underwent a major transformation, keeping CGIAR as its name. The 15 Research Centers generate and disseminate knowledge, technologies, and policies for agricultural development through the CGIAR research programs.

Biodiversity International

Biodiversity International is a recognized leader in agricultural biodiversity research working with more than 700 partners around the world to improve the lives of smallholder farmers and rural communities. In 2006, IPGRI and INIBAP became a single organization and subsequently changed their operating name to Biodiversity International. The new name reflects an expanded vision of its role in the area of biodiversity research for development. Biodiversity international is a member of the CGIAR Consortium and a partner with Rome-based food and agriculture agencies Food and Agriculture Organization of the UNs (FAO), International Fund for Agricultural Development (IFAD) and World Food Programme (WFP). Biodiversity international's purpose is to investigate the conservation and use of agricultural biodiversity in order to achieve better nutrition, improve smallholders' livelihoods and enhance agricultural sustainability.

African Biodiversity Network (ABN)

The Purpose of ABN is to ignite and nurture a growing African network of individuals and organizations working passionately from global to local level, with capacity to resist harmful developments and to influence and implement policies and practices that promote recognition and respect for people and nature. ABN is a network that supports and builds relationships and links between groups and individuals that share a common vision and values (Table 1).

So far Ethiopia's participation in international collaborations and networking in PGRFA conservation is minimal. Thus, future needs and priorities are shown in Table 2.

Access to PGRFA, Sharing of Benefits Arising out of Their Use and Farmer's Right

Access and benefit sharing legislations: Ethiopia has put in place Proclamation 482/2006 to provide legal frameworks for accessing genetic resources and sharing benefits from their use. The basic objective of this Proclamation is to ensure fair and equitable

sharing of benefits arising from the use of genetic resources and to promote the conservation and sustainable utilization of the country's biological resources. Statements of the Proclamation includes a range of issues such as ownership, user rights, and conditions for access, benefit sharing, types of benefits, powers and responsibilities among others. The law bears the necessity of Prior Informed Consent (PIC) to access genetic resources or community knowledge. Following PIC, the Institute including relevant stakeholders negotiates on Mutually Agreed Terms (MAT) with the user of the genetic resource.

Access and movement of PGRFA

Movements of genetic resources into and out of the country have a long history in Ethiopia. As there were no regulations in place until recent past, genetic resources have been freely accessed. The understanding was that genetic resources are considered as "a common heritage of human kind". Students, researchers, tourists, and other travellers have been involved in the transfer of genetic resources into and out of Ethiopia. The ABS law of Ethiopia does not allow free access to genetic resources. Over the past ten years, most of the access requests have come from post graduate students pursuing their MSc

Table 1: Summary of the networks and member institutions in Ethiopia.

Network Title (Acronym)	Institution responsible for coordination	Member/Partner institution in Ethiopia	coverage
Eastern Africa Plant Genetic Resources Network (EAPGREN)	ASARECA	Institute of Biodiversity Conservation	Eastern Africa
African Network for Agriculture, Agroforestry and Natural Resources Education (ANAPE)	World Agroforestry Centre (ICRAF)	Wondo Genet College of Forestry and Natural Resources	Africa
Consultative Group on International Agricultural Research	CGIAR	International Livestock Research Institute (ILRI)	Global
Biodiversity International	Biodiversity International	-	Global
African Biodiversity Network (ABN)	ABN	Institute for Sustainable Development (ISD) MELCA Mahiber	Regional

Note: Future needs and priorities for international collaboration and networking.

Table 2: Needs for international collaboration and networking.

Needs	Level of priority			
	Not applicable	Low	Medium	High
Understanding the state of diversity				√
Enhancing in situ management and conservation			√	
Enhancing ex situ management and conservation				√
Enhancing use of PGRFA				√
Enhancing research				√
Enhancing education and training			√	
Enhancing legislation		√		
Enhancing information management and early warning systems for PGRFA			√	
Enhancing public awareness				√

and PhD studies and researchers working in agricultural research organizations. These access requests have been facilitated through Material Transfer Agreement (MTA). Recently, requests for material transfer have increased due to easy access system created as a result of restructuring of the business process of IBC. Regarding germplasm distribution activity over 109,257 accessions of different crops were delivered to researchers and higher learning institutions. However, the status of germplasms accessed and transferred through MTA is unknown because of lack of information exchange between the users and the provider. There has been no follow up mechanisms in place to monitor the development of the genetic resources. However the Genetic Resources Transfer and Regulation Directorate is trying to network the different players to establish follow up mechanism and getting feedback from all stakeholders.

ABS practices (Implementation of ABS in Ethiopia)

ABS agreement on tef (*Eragrostis tef*): Ethiopia has been exercising ABS since it has established the national legal framework. ABS agreement on tef (*Eragrostis tef*) genetic material was signed on April 2005 between Ethiopia and Dutch company for duration of 10 years. Although legal processes for accessing tef was concluded more or less successfully, the benefit sharing component has never been properly implemented.

ABS agreement on *Vernonia galamensis*: In July 2006, a British Biotechnology firm (Vernique Biotech Ltd - UK "Company") signed access and benefit sharing agreement with the Institute of Biodiversity Conservation to commercialize the oilseed plant *Vernonia galamensis*. The agreement was signed based on Mutually Agreed Terms (MAT) set by the two parties. *Vernonia galamensis* is considered as a potential replacement for petroleum in a variety of industrial uses. According to the agreement, the company has exclusive access to *Vernonia* seed to export and use for the purpose of developing and commercializing the 27 *Vernonia* seed oil products for ten years. In exchange, the Ethiopian government agreed to receive royalty payments and profit shares, while hundreds of local farmers believed to have an opportunity to boost their earnings by growing the oilseed on their farm lands. The agreement excludes intellectual property rights over *Vernonia galamensis* or any genetic components thereof.

With regards to benefit sharing, the agreement includes both monetary and non-monetary benefits. Veronique agreed to pay an upfront payment of € 35,000 up on signing the agreement. Also, Veronique has agreed to source at least 75% of its annual requirements for *Vernonia* seed by producing it and/or by buying it from contract growers or local communities in Ethiopia. This was aimed to benefits local communities from the agreement of *Vernonia*. As part of the non-monetary benefits, Vernique has agreed to train local communities. The agreement had also included sharing of research results and technologies with the provider. On the other hand, license/or upfront payment was obtained after the agreement.

The implementation of the ABS including *Vernonia* agreement is challenged by various factors. The most important are: limited negotiation capacity and lack of effective enforcement, lack of follow up mechanisms for the ABS agreement, lack of clear market information

regarding the value of genetic resources. As a consequence, value is often determined by the user, who frequently determines the value of the genetic resource by comparison to a non-genetic substance that is currently in use. Lack of information about the commercial status of the accessed genetic resource products is another challenge affecting benefit sharing agreements.

ABS agreement on aloe species: On 3rd December, 2009 access to Aloe genetic resources agreement was signed between IBC and a local company called the G Seven trade and Industry PLC. The provider (IBC) agreed that the company could access and use three species of aloe for extracting naturally existing oils in order to replace the batching oil the company has been importing from abroad. The company is not allowed to access the traditional knowledge of local communities on the use and application of aloe species nor claim any right over such traditional knowledge without the consent of the local communities. The benefits agreed upon were non-monetary. These include involvement of staff of the provider in the research carried by the company and sharing of the result of research, training of the local community in the collection and supply of Aloe leaves to the company.

ABS agreement on *Withania somnifera*, *Osyris* species and *Dichrostachys cinerea*: On 6th July, 2012 DOCOMO Plc. has signed access and benefit sharing agreement with Institute of Biodiversity conservation (IBC) on germplasms of three forest species namely, *Withania somnifera*, *Osyris* species and *Dichrostachys cinerea*, to process various herbal, cosmetics and medicinal products from these genetic resources. The competent authority (IBC) has received the application and examined the access request in accordance with article 14 of the access proclamation and procedure for commercial access outlined under article 3 of the regulation. Following public comments, PIC was obtaining from concerned local communities and IBC has carried out negotiation process on mutually agreed terms with the company and finally signed mutual agreements with the company. Different stakeholders were involved in the negotiation process. The company agreed to share both monetary and non-monetary benefits that arise out of the utilization of the genetic resources. The monetary benefits included upfront payment, royalty payment, annual license fee and a lump sum of net profit. The non-monetary profit agreed upon were participation of Ethiopian scientists in the research plan of the company, sharing of knowledge or technologies it may generate using the genetic resources and training of concerned local communities to enhance local skills in genetic resources conservation, evaluation, development, propagation and use at least once a year through the time of contract to ensure sustainable utilization of the genetic resources. In the agreement the company is not permitted the stated genetic resources for any other purposes whatsoever unless explicit written permit is given by the provider. Similarly, the company is allowed to access and use the genetic resources only to the amount not greater than the sustainability threshold through the time of contract. The company shall neither claim nor obtain intellectual property rights over the genetic resources or any parts of them.

Needs regarding Access and Benefit Sharing

Although the needs regarding genetic resources and benefit sharing of plant genetic resources may be multiple, the following are few among these:

- Information on the value of genetic resources is not available at the national level. This is one of the gaps in the exercise of ABS provisions. The estimate of the value of genetic resources is usually guessed rather than being based on scientific data sources. The country needs to conduct research on value of its biological resources.

- Another important problem in implementing ABS provisions is lack of strong cooperation and links between the ABS focal point (IBC) and the various organizations having responsibilities for different aspects of plant genetic resources. Therefore, there is the need to make a stronger coordination in order to implement ABS smoothly and effectively.

- There is also a critical gap in trained man power especially in negotiating agreements that have an international nature and research on value of biological resources. Building the capacity of staff in these areas needs financial support for short and long term trainings; participation in relevant workshops and conferences to enrich the experiences and capacity of human resources at the national focal point.

- Awareness rising on ABS also needs serious considerations if we are to narrow the knowledge gap within the stakeholders working in the area. This activity needs financial and material support from national and international partners. The cooperation and creation of favorable working conditions between the different governmental and non-governmental organizations can be improved through awareness raising activity.

- Compliance to contractual agreements that are signed

between the provider of the genetic resources and the user country is among the vital issues that create destruction of confidence and good working conditions. Due to non-compliance the credibility of dealing on access to genetic resources and the associated traditional knowledge and benefit sharing from their use has a discouraging impact on the community that are custodians of these resources instead of being incentive for conservation and sustainable use of genetic resources.

Conclusion

In general, from this review we can understand that currently Ethiopia gives emphasis to genetic resources of biological diversity and there are many regional and local level concerned bodies were established and basically Ethiopian Biodiversity institute has mandate and duties in order to adopt and implement different policy in the country and ABS needs the participation of the whole community in order to become effective and efficient across in all area of the country.

References

1. (2007) Ethiopia - Proclamation to provide for access to Genetic Resources and Community Knowledge and Community Right, 2006. Law, Environ and Dev J 3: pp. 91-99.
2. (2012) Ethiopia: Third country report on the state of Plant Genetic Resources for Food and Agriculture. Institute of Biodiversity Conservation (IBC), Addis Ababa.
3. Nutrition Division (2002) Improving nutrition through home gardening: a training package for preparing field workers in Africa. FAO.