FACULTY OF LAW AND CRIMINOLOGY

THE INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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"It's clear that agriculture, done right, is the best means the world has today to simultaneously tackle food security, poverty and environmental degradation."[1]

– Irene ROSENFIELD

"What we eat starts with the seeds we plant and the food system we have in place."[2]

- José GRAZIANO DA SILVA

[1] Quote by Irene ROSENFIELD, chairman and CEO of Mondelez International. She said this on the 27 January 2012 in Davos at the launch of a new report by the World Economic Forum's New Vision for Agriculture initiative. Cited from: *New report outlines six critical success factors to drive agriculture transformations*, Mondelez International, 27 January 2012, available at: <https://ir.mondelezinternational.com/news-releases/news-release-details/new-report-outlines-six-critical-success-factors-drive> (accessed 12 February 2020).

[2] Quote by José GRAZIANO DA SILVA, he was the Director-General of the Food and Agriculture Organization of the United Nations from 2012 to 2019. Cited from: www.fao.org/director-general/former-dg/da-silva/en/ (accessed 12 February 2020).

ABSTRACT

"When everyone adds firewood, the flames of a bonfire rise high".[3] This is pretty much the philosophy behind the International Treaty on Plant Genetic Resources for Food and Agriculture, adopted in 2001 by the Food and Agriculture Organization of the United Nations. Food security is in a critical state in many of the world's countries and global challenges such as climate change, overpopulation, poverty and the loss of agricultural biodiversity, are certainly not helping. However, if every country contributes individually and if the international community works together, things can still be turned around. International cooperation in the conservation, sustainable use and exchange of plant genetic resources for food and agriculture is key to ensure food security in the present and future. This is the general driving force behind the Treaty, whose aim is to ensure food security by offering countries a legal framework for the conservation of these resources, their sustainable use and the fair and equitable sharing of the benefits arising out of their use. Part one of the present research gives an overview of the context of food insecurity and biodiversity loss, which the Treaty aims to combat, as well as a look at the importance of plant genetic resources for food and agriculture and the historical journey which led to the adoption of the Treaty. Part two consists of a broad analysis of all the provisions of the Treaty, in order to assess whether the Treaty as a whole can provide an effective response to the growing food insecurity. The Treaty provides for a set of measures for the conservation and sustainable use of plant genetic resources. A Multilateral System of Access and Benefit Sharing is established in order to facilitate national and international exchanges of 64 of the world's most important plant genetic resources and ensure the sharing of benefits arising out of their use. Farmers' rights are recognized as a reward for their enormous contribution in the conservation, development and sustainable use of plant genetic resources. Moreover, a funding strategy to support projects for the conservation and sustainable use of crop diversity is created. The analysis of the Treaty's provisions come to show that the Treaty touches upon some sensible topics, such as intellectual property rights, farmers' rights and financial resources, challenging the implementation of the Treaty. This is mirrored in, for example, the implementation of the Treaty in Ethiopia, one of the world's poorest countries, but richest in terms of plant diversity, as studied in part three.

[3] Quote by Qu DONGYU, current Director-General of the Food and Agriculture Organization. Cited from: X, *When we go together, we go further – working with partners to deliver*, 3 August 2020, available at: <www.fao.org/director-general/news/news-article/en/c/1301423/> (accessed 13 August 2020).

PREFACE

I have always been quite indecisive about what I wanted to do "later when I grew up". As a child, I wanted to be an astronaut as everything space related, still to this day, amazes me. After watching Grey's Anatomy, I wanted to become a doctor. However, after I realized physics were not my strength and I cannot stand blood, I was a little bit lost. When I graduated from secondary school and "later" was no longer later, I could no longer put off the choice of what to study. I chose to give law a try and without really knowing what to expect I started in 2015 at the University of Saint-Louis in Brussels. After my bachelor, I decided to pursue my studies at Ghent University as the 'à la carte' system really spoke to me and I wanted to continue practising Dutch.

Over the years I realized I was most interested in international public law and especially international humanitarian law, international human rights law and environmental law. Aspiring to work in the international field, I knew I wanted my thesis subject to be international. When deciding what topic to choose for my master thesis, I was looking for something combining my passion for the environmental cause with a humanitarian aspect. When I saw the International Treaty on Plant Genetic Resources for Food and Agriculture on the list of topics, it spiked my interest. I did some research and really liked the concept of international cooperation between developed countries and developing countries to fight for a common cause, which is, ensure food security worldwide while sustainably using our planet's precious resources.

I would like to take the opportunity to acknowledge the people that have helped and supported me during my study carrier and especially during the writing of my thesis.

Firstly, I would like to express my gratitude to my supervisor Prof. Dr. An Cliquet for her help and advice, as well as for introducing me to the International Treaty.

Secondly, I would like to thank both my parents for giving me the opportunity to study and giving me plenty of support and motivation during those five years, from my first exam session to the writing of my thesis. When my Erasmus in Rome went up in smoke due to COVID-19, they helped me to persevere and pursue the writing of my thesis at home.

Thirdly, I would also like to thank my friends. With them, I truly experienced the student life and made memories I will cherish forever. To my boyfriend Nicolas, you were an incredible support during the writing of my thesis.

- Inès Bijvoet

Brussels, 8th August 2020

LIST OF ABBREVIATIONS

BSF	Benefit-sharing Fund
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CGRFA	FAO Commission on Genetic Resources for Food and Agriculture
CSB	Community seed bank
CWR	Crop wild relatives
EBI	Ethiopian Biodiversity Institute
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
GLIS	Global Information System
GPA	Global Plan of Action
IARC	International Agricultural Research Center
IBPGR	International Board of Plant Genetic Resources
ILRI	International Livestock Research Institute
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture

IU	International Undertaking on Plant Genetic Resources
IPR	Intellectual Property Right
MLS	Multilateral System
MTA	Material transfer agreement
PGRFA	Plant Genetic Resources for Food and Agriculture
SMTA	Standard Material Transfer Agreement
UN	United Nations
UNEP	United Nations Environment Programme
UPOV	International Union for the Protection of New Varieties of Plants
WFP	World Food Programme
WIEWS	World Information and Early Warning System

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INTRODUCTION

Our mental and physical capacities and overall well-being are highly dependent on the quantity and quality of food we have access to. Unfortunately, food insecurity is part of today's major global challenges, intertwined with other challenges such as poverty, climate change, overpopulation and the loss of agricultural biodiversity. Over one billion people suffer from hunger and malnutrition. Hence why multiple national, regional and international legal instruments have been adopted over time in order to ensure present and future food security. One of them is the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), also known as the International Seed Treaty. This Treaty is the subject of the present research and will furtherly be referred to as "the Treaty".[4]

The Treaty is a legally binding international agreement which was adopted by the Food and Agriculture Organization (FAO) of the United Nations (UN) in 2001. As the name of the Treaty already gives away, the Treaty focuses on the plant genetic resources for food and agriculture (PGRFA). These resources are necessary for the production and improvement of a diversity of crops as well as insurance against unpredictable environmental changes and future human needs. The adverse consequences of the long-time growing human population and climate change are finally catching up, putting the diversity of plants that feed the world in jeopardy and exercising new pressures on agriculture. According to the FAO, the global food production has to increase by 70% by 2050 to meet the increasing demand, while the planet's natural resource base is already about to reach its limits.[5] Plant breeding, the practise through which crops are improved, will be crucial to ensure food security in the present and future. Crop varieties with higher yields and with the ability to resist against new pests, diseases and extreme weather conditions must be developed. For that purpose, the conservation and sustainable use of the existing crop diversity as well as the access of breeders and farmers to it is primordial. The world's food security depends more than ever on the conservation, exchange and sustainable use of agricultural biodiversity and the genetic resources that constitute such diversity. Here is when the importance of the Treaty steps in. The general aim of the Treaty is to ensure food security through the conservation of PGRFA, sustainable use of PGRFA and the

[4] FAO Conference, Resolution 3/2001, *Adoption of the International Treaty on Plant Genetic Resources for Food and Agriculture and Interim Arrangements for its Implementation,* Thirty-first Session of the FAO Conference, Rome, 3 November 2001, No. 43345 (entered into force 29 June 2004). Hereafter: FAO and ITPGRFA.
[5] FAO, *How to feed the world in 2050*, October 2009, p. 8.

fair and equitable sharing of the benefits arising out of their use.[6] The Treaty provides Contracting Parties with the legal measures and mechanisms necessary for the achievement of its goal, such as a multilateral system that facilitates international exchanges of PGRFA, a funding strategy to support projects for the conservation and sustainable use of crop diversity and the recognition of farmers' rights. The Treaty is a crucial instrument in the battle against hunger and in ensuring food security for future generations. However, its success exclusively depends on the implementation of the provisions by the Contracting Parties at national level, which currently can be counted at the number of 147.

The present research was conducted in order to give readers an overview of why the Treaty was adopted and its importance in facing today's challenges, as well as a general understanding of the functioning of the Treaty. In light thereof, a broad analysis of all 35 provisions of the Treaty is given. Most, if not all, legal instruments require further explanation and comments in order to understand their true meaning and functioning. The Treaty, especially, contains a lot of question marks and remains quite vague regarding some particularly sensible topics. The main research question which this research has as aim to answer is the following one: "*Can the International Treaty on Plant Genetic Resources for Food and Agriculture, through its binding measures and mechanisms regarding the access to PGRFA and their conservation and sustainable use, provide for an effective response to the growing food insecurity?*".

The adopted method is descriptive and interpretative. The research is based on my personal review and analysis of existing data I have collected. Of course, the basis of the research is the text of the Treaty itself. Most of the data used in order to analyze the text of the Treaty has been collected from official FAO documents, such as educational modules on the Treaty and reports conducted by the FAO's bodies, which are all available online. Resolutions of the Governing Body of the Treaty and reports of its sessions, as well as doctrine (books, articles, research papers…), reports, conferences, Internet sources (relevant blogs and newspapers) etc. have also been very useful in the conduct of this research.

The art and science that is agriculture can be quite technical and difficult to understand, especially concerning crop genetic improvement. As this is a thesis of a master's degree in law, I won't be focusing too much on the technical aspects of plant genetic resources and crop diversity. The thesis is focused on the legal and socio-economic implications of the Treaty, and

[6] ITPGRFA, article 1.1.

only if needed in that regard the scientific outlooks are discussed. Moreover, as there is already very much to say about the Treaty, the establishment of some boundaries were necessary when conducting the research. The research is therefore limited to the Treaty, other legal instruments, although very relevant in the field of biodiversity as well, are not addressed in the current research.

The research consists of three large parts. The first part focuses on the process of realisation of the Treaty, including the context it was adopted in, its importance to ensure food security and the historical journey which led to its adoption. The second part consists of an analysis of all of the Treaty's provisions. The third part is a case-study of the implementation of the Treaty in Ethiopia.

PART 1 – THE REALISATION OF THE TREATY

Chapter one gives an overview of the socio-economic and environmental context in which the Treaty was adopted and has to be executed in. Chapter two addresses how the Treaty plans to respond to the lack of food security through the management of plant genetic resources for food and agriculture. Chapter three gives a brief overview of the historical journey that led to the adoption of the Treaty.

Chapter 1. The socio-economic and environmental context: the lack of food security

In order to fully understand any legal instrument and its purpose, it is primordial to pay attention to the context it was adopted in. The context reveals the driving forces behind the adoption of a legal instrument. The following sections are meant to give an overview of the context that made the adoption of the Treaty highly necessary. It should be kept in mind that some of the discussed topics are very broad and therefore have been restricted to the aspects relevant for a better understanding of the Treaty.

First, we will look at the meaning of food security (1.1). Secondly, we will see that the reality of today's world consists of food insecurity (2.2). Thirdly, the loss of agricultural biodiversity as a threat to food security will be addressed (2.3).

1.1 Food security

As for the Treaty, the lack of food security worldwide is the driving force which led to its adoption. The overall goal of the Treaty is to ensure global food security.[7]

1.1.1 Definition of food security as given by the FAO

Food security is "when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life".[8] The FAO derives four pillars of food security from this definition. Firstly, the availability of food, which implies the production of enough food. Secondly, the access to a

[7] This is stated explicitly in article 1.1 of the Treaty (objectives of the Treaty); FAO, *Introduction to the International Treaty on Plant Genetic Resources for Food and Agriculture*, First Educational Module in the Educational Modules on the International Treaty Series, Rome, February 2011, p. 47 (hereafter: FAO (2011)).
[8] FAO, *World Food Summit - Plan of Action*, Rome Declaration on World Food Security Rome, 13-17 November 1996.

sufficient amount of food (quantity). Thirdly, the utilization of food, meaning the access to diverse and nutritious foods (quality). Fourthly, the stability of the three previous pillars over time. In order to improve the food security, all four aspects have to be looked upon. The FAO emphasizes those four pillars have to be fulfilled simultaneously for there to be food security.[9] This definition of the FAO clarifies that food security is not only about stabilizing the food production and "delivering more calories to more people" (quantity), it is also about providing a broader variety of genetic resources to the farmers in order to have dietary diversity (quality).[10]

Food security strongly impacts our health, proper nutrition is absolutely primordial for our mental and physical wellbeing. In a report of 2018, the FAO said that "access to safe, nutritious and sufficient food is a basic need and should be treated as a human right, with priority given to the most vulnerable".[11] Hence why goal number two of the UN Sustainable Development Goals 2030 is the 'Zero Hunger' goal. The Zero Hunger goal doesn't simply aim at eradicating hunger and all forms of malnutrition, but also at ensuring access by all people to safe, nutritious and sufficient food all year round.[12]

Unfortunately, today's reality consists of a substantial lack of food security. Moreover, evolving global challenges such as climate change and the increasing human population will make the lack grow even bigger if no adequate measures are taken.

1.1.2 Diversity and importance of plant-based food

There are diverse taxonomic ranks of classification of plants. A genus is a taxonomic rank above the species. A species is a group of organisms that can reproduce, such as maize.[13] It is estimated that there are between 300.000 and 500.000 plant species. About 30.000 of them are

[9] FAO, IFAD, UNICEF, WFP and WHO, *The State of Food Security and Nutrition in the World 2018: Building climate resilience for food security and nutrition,* FAO, Rome, 2018, p. 159 (hereafter: FAO (2018)); FAO, *An Introduction to the Basic Concepts of Food Security*, Food Security Information for Action – Practical Guidelines, 2008, p. 1.
[10] J. ESQUINAS-ALCAZAR, C. FRISON and F. LOPEZ, *Introduction: A Treaty to Fight Hunger – Past Negotiations, Present Situation and Future Challenges,* in J. ESQUINAS-ALCAZAR, C. FRISON and F. LOPEZ (Eds.), *Plant Genetic Resources and Food Security Stakeholder Perspectives on the International Treaty on Plant Genetic Resources for Food and Agriculture* (p. 1-23), co-published by Bioversity International and Earthscan, Oxon – New York, July 2011, p. 14.
[11] FAO (2018), p. 26.
[12] UN, *Sustainable Development Goals,* 2030 Agenda for Sustainable Development, 2015, available at: <www.un.org/sustainabledevelopment/hunger/> (accessed 18 January 2020).
[13] FAO (2011), p. 39.

edible and about 7000 have been cultivated or collected by humans for food.[14] Within a species there is often an immense genetic diversity, which are called varieties. For instance, the rice species *Oryza sativa* has more than 100.000 varieties.[15] A variety is the taxonomic rank below the species. It is a group of organisms that have the same ancestor (they belong to the same species) and have the same characteristics (physical appearance, taste etc.). Varieties of the same species can normally interbreed with each other. [16]

Varieties which have been obtained through human intervention and that comply with the criteria of distinctiveness, uniformity and stability are called "cultivated varieties" (cultivars).[17] These can be classified in "modern varieties" and "farmers' varieties".[18] Farmers' varieties, also known as landraces or traditional varieties, are "the product of breeding or selection carried out by farmers, either deliberately or not, continuously over many generations."[19] Farmers' varieties generally are genetically heterogeneous. This makes them the main focus of conservation programs. Modern varieties are "the product of plant breeding in the formal system (sometimes called "scientific breeding") by professional plant breeders working in private companies or publicly-funded research institutes."[20] They typically have a high degree of genetic uniformity and are high-yielding. [21] Cultivated varieties are often also referred to as "crop varieties" or simply "crops". The term crop refers to the entire genus or species of an agricultural plant, depending on the crop in question. For instance, when we use the term "apples" we are speaking about the entire genus called *Malus*, which includes all different species of apples. When we talk about eggplant, we only speak about one species (*Solanum melongena*). However, in common language we call both the apples and eggplants crops.[22]

Agriculture is the practice through which our plant-based food is produced. Plant-based food makes up a huge part of our daily nutrition. In Asia, the Pacific, the Near East and Africa plants make up around 90% of the people's diet. In Latin America and the Caribbean around 80% and

[14] FAO, *First Report on The State of the World's Plant Genetic Resources for Food and Agriculture*, Rome, 1996, p. 14 (hereafter: FAO (1996)).
[15] FAO (1996), p. 18.
[16] FAO (2011), p. 43; Article 2 of the Treaty defines variety as: "a plant grouping, within a single botanical taxon of the lowest known rank, defined by the reproductible expression of its distinguishing and other genetic characteristics".
[17] FAO (2011), p. 43.
[18] FAO (1996), p. 18-19.
[19] FAO (1996), p. 19.
[20] FAO (1996), p. 18-19.
[21] FAO (1996), p. 19.
[22] FAO (2011), p. 42.

in Europe and North America around 75%.[23] Agricultural productivity is thus indispensable for food security. Amongst our plant-based food we can distinguish major crops and minor crops. Major crops are the thirty crops that are said to "feed the world".[24] They provide 95% of the world's plant-derived caloric intake. Amongst them are wheat, rice, sugar products (mainly sugar cane and sugar beet) and maize, which together provide for over 65% of the global plant-derived caloric intake.[25] Other major crops include potatoes, sweet potatoes, millet, soybean, sorghum etc.[26] Besides the major crops, there are many minor crops and underutilized species which are also very important for food security at sub-national levels. For instance, the countries of the West and Central African sub-regions identified many minor crops and underutilized species of local importance, such as species of cereals, legumes, oil crops, roots and tuber crops, fruits and nuts, vegetables, spices etc. These minor crops and underutilized species aren't given much attention in research, conservation and development programs. This is also the reason why there is a lack of knowledge about their diversity and distribution.[27]

Also nutritionally important are wild plant species, like roots, leafy vegetables and fruits. They are part of the daily diet of many poor rural households, especially during periods of famine, and are significant sources of income for poor households. Crop wild relatives (CWR), meaning weeds and/or wild plant species which are genetically related to crops, but unlike crops have not been domesticated, are also important as tools for food security and crop improvement.[28]

1.2 The current state of affairs: a lack of food security worldwide

Food insecurity is "a situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life. It may be caused by unavailability of food, insufficient purchasing power, inappropriate distribution or inadequate of food at the household level."[29] Food insecurity can result in malnutrition. Malnutrition can refer to undernutrition (underweight) as well as overnutrition (overweight and obesity).[30] Undernutrition is a form of malnutrition where a person doesn't get

[23] FAO, *Nutritional Value of Some of the Crops under Discussion in the Development of a Multilateral System*, Background Study Paper No. 11, April 2001, p. 5-6 (hereafter: FAO (2001)).
[24] FAO (1996), p. 14.
[25] FAO (2001), p. 4.
[26] FAO (1996), p. 14.
[27] FAO (1996), p. 16.
[28] FAO (1996), p. 18.
[29] FAO (2018), p. 159.
[30] M. BLÖSSNER and M. DE ONIS, *Malnutrition: quantifying the health impact at national and local levels*, Environmental Burder of Disease Series No. 12, World Health Organization, Geneva, 2005, p. 1.

enough nutrients (calories) for his or her body to function properly. Undernutrition weakens the immunity system which makes the individual more vulnerable to infectious diseases. It is linked to a substantial increase of the risk of mortality and morbidity.[31] It also slows down the cognitive and physical development of children. Hunger or food deprivation is an extreme form of undernutrition where the person is physically in pain or discomfort because of an insufficient amount of food.[32]

Food insecurity and poverty are strongly intertwined. "While poverty is undoubtedly a cause of hunger, lack of adequate and proper nutrition itself is an underlying cause of poverty".[33] In other words, poverty is a major cause of food insecurity and food insecurity increases the chances of poverty. It is a vicious cycle. The economic growth, the income growth as well as the investment in health and education are determining factors for the degree of food security in a country. This explains why the decrease of food insecurity strongly depends on the government's policies to combat poverty.[34] Following this logic, it isn't surprising that the populations of developing countries suffer from more undernutrition than developed countries. The Treaty, being an agricultural Treaty, focuses on agriculture in order to increase the food security. In this context, it is important to notice that agricultural productivity is very much linked to the economic welfare of a country as it determines how much money can be invested in the agricultural sector.

In 2019, the FAO published a detailed report on the state of food security and nutrition worldwide.[35] From this report appears that currently more than 820 million people in the world, meaning 1 out of 9 people, do not have access to enough food in order to nourish properly.[36] This makes food insecurity one of the world's major challenges. The report also shows that, after a decade of steady decline, the number of people suffering from hunger worldwide has been slowly increasing since 2015. Especially in Africa the situation is very alarming as the undernutrition has increased in almost all sub-regions. In Eastern Africa almost a third of the population is undernourished. In Latin America and the Caribbean the undernutrition has also increased the past few years. On a more positive note, in most of the developing countries in

[31] *Ibidem*.
[32] FAO (2018), p. 159; FAO, *An Introduction to the Basic Concepts of Food Security*, *op. cit.*, p. 3.
[33] FAO, *An Introduction to the Basic Concepts of Food Security*, *op. cit.*, p. 3.
[34] *Ibidem*.
[35] FAO, IFAD, UNICEF, WFP and WHO, *The State of Food Security and Nutrition in the World 2019 (SOFI): Safeguarding against economic slowdowns and downturns*, FAO, Rome, July 2019 (hereafter: Report (2019)).
[36] Report (2019), p. 6.

Asia the undernutrition is still decreasing. Despite this, Southern and Western Asia are still amongst the sub-regions in the world with the most undernutrition.[37] The World Food Programme (WFP) has published a "Hunger Map 2019" which shows the approximate percentage of undernutrition in the total population of each country in the period of 2016 to 2018.[38]

The worldwide increasing food insecurity has multiple causes, such as climate change along with extreme weather events, man-made conflicts, overpopulation, economic downturns, etc.[39] The COVID-19 pandemic is expected to strongly increase the rate of undernutrition in the world as well.[40]

1.3 The loss of agricultural biodiversity as a threat to food security

"The varietal wealth of the plants that feed and clothe the world is slipping away before our eyes, and the human race simply cannot afford to lose it."[41]

Over the last century multiple phenomena have engendered a substantial loss of agricultural biodiversity. This is also known as "genetic erosion". The FAO defines genetic erosion as "the loss of genetic diversity, including the loss of individual genes, and the loss of particular combinations of genes such as those manifested in locally adapted landraces."[42] In the narrow sense it means the loss of genes. In the broad sense it means the loss of entire plant varieties and species.[43] In other words, genetic erosion is the loss of genetic diversity between crop species (interspecific diversity) and within a crop species (intraspecific diversity).[44] This

[37] Report (2019), p. 6-9.
[38] FAO, *Hunger Map 2019*, available at: <https://docs.wfp.org/api/documents/WFP-0000107324/download/?_ga=2.146962615.1453313835.1593595237-827103465.1593595237> (accessed 10 January 2020).
[39] This is in no way an exhaustive list.
[40] On the 21st of April 2020 the UN World Food Programme (WFP) warned that the COVID-19 pandemic could double the number of people suffering acute hunger; WFP, *COVID-19: Potential Impact on the world's poorest people – A WFP analysis of the economic and food security implications of the pandemic*, April 2020; WFP, *Covid-19 will double number of people facing food crises unless swift action is taken*, 21 April 2020, available at: <www.wfp.org/news/covid-19-will-double-number-people-facing-food-crises-unless-swift-action-taken> (accessed 5 May 2020).
[41] This is a quote by J.R HARLAN, an early contributor to the science of plant genetic resources. Cited from: J. R. HARLAN, *Evolution of cultivated plants*, in O. H. FRANKEL and E. BENNETT (Eds.), *Genetic Resources in Plants: their exploration and conservation* (p. 19-32), IBP Handbook No. 11, Blackwell Scientific, Oxford, 1970.
[42] FAO (1996), p. 33.
[43] FAO (1996), p. 33.
[44] M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *Genetic erosion in crops: concept, research results and challenges*, Plant Genetic Resources Journal – Vol. 8 (p. 1-15), Cambridge University Press, October 2009, p. 1.

phenomenon of crop diversity loss isn't new, already in 1996 the FAO warned that there had been a substantial loss of diversity in plant genetic resources for food and agriculture.[45] The FAO even claims that more than 75% of global crop diversity has disappeared over the 20th century.[46] This is a very serious problem considering a diversity in plant genetic resources is crucial in order to ensure food security (*cf. infra Chapter 2, Section 2*). According to the FAO, "the erosion of these resources poses a severe threat to the world's food security in the long term".[47] The Treaty mentions genetic erosion in its Preamble ("alarmed by the continuing erosion of these resources") as well as in Article 6.2 concerning the sustainable use of plant genetic resources.

The loss of diversity in crops has multiple causes, such as climate change and the modernization of agriculture.

1.3.1 Climate change

Climate change is undoubtedly the 21st century's most serious environmental challenge. The UN Framework Convention on Climate Change defines climate change as follows: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".[48] Climate change has many causes, however, the main one is the emission of greenhouse gasses which causes the temperatures to rise and the CO2 concentration in the atmosphere to increase.[49] The rise in temperatures, also called global warming, and the CO2 increase have caused many environmental global phenomena to occur over the past decades. Multiple of these phenomena negatively impact agricultural production. Firstly, some natural processes required for biodiversity like the pollination and the fertilisation of the soil are disrupted because of the warmer temperatures. Secondly, climates are becoming more variable and extreme weather conditions like droughts, floods and violent storms occur more often.[50] Thirdly, the rising temperatures lead to more weeds, pests and diseases.[51]

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[45] *Ibidem*.
[46] FAO (2011), p. 7.
[47] FAO (1996), p. 1.
[48] UN, *United Nations Framework Convention on Climate Change*, Rio de Janeiro, 9 May 1992, article 1 (entered into force 21 March 1994).
[49] M.I. RAHMAN, *Climate Change: A Theoretical Review*, Interdisciplinary Description of Complex Systems No. 11(1), Melbourne, January 2013, p. 4.
[50] The number of climate-related disasters has doubled since the early 1990s.; FAO (2018), p. 39.
[51] FAO (2011), p. 10.

All of these phenomena have in common that they negatively impact crop production, resulting in an even greater lack of food security than there already is. Climate change is putting, and will even more so in the future, new pressures on agriculture in all countries.[52] Climate change puts all dimensions of food security at risk (food availability, access, utilization and stability).[53] For instance, extreme weather conditions and disasters due to climate change causes plants and their habitats to be destroyed. This has obsolete consequences on the agricultural productivity and thus the amount of crops produced and food availability. It also causes food price hikes and income losses which as a result reduces people's access to food.[54] Moreover, climate change has accelerated the loss of genetic diversity of crops. Indeed, many plant species aren't able to adapt to the variable and more extreme climate. This will cause and already has caused the extinction of many traditional plant varieties.[55]

1.3.2 Modernization of agriculture

The modernization of agriculture is often blamed for the occurrence of genetic erosion.[56] The 1950s marked the beginning of what is called the Green Revolution. This was a period during which the traditional agricultural systems majorly changed and improved high-yielding crop varieties were developed. The world's food production highly increased during this period. For instance, since 1970 the world cereal production has more than doubled.[57] The Green Revolution was the first step in the shift from traditional agriculture to modern commercial agriculture. Many factors linked to the Green Revolution and modernization of agriculture have led to the further diversity loss between and within crops. The modern agriculture's "tendency towards monoculture, global seed production and distribution, the move from traditional agricultural crops to planting cash crops for export, the abandonment of traditional farming practices and heavy reliance on a small group of core crops has had direct effects on the diversity of plant genetic resources for food and agriculture".[58] Modern agricultural techniques are also identified as a cause of genetic erosion as they often result in the destruction or

[52] FAO (2011), p. 11.
[53] FAO (2018), p. 39-40; L. PAREKH, *The basics of food security (and how it's tied to everything)*, World Vision Canada, June 2020, available at: <www.worldvision.ca/stories/food/the-basics-of-food-security#6> (accessed 30 June 2020).
[54] FAO (2018), p. 70.
[55] M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p. 3.
[56] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *The International Treaty on Plant Genetic Resources for Food and Agriculture – Implications for Developing Countries and Interdependence with International Biodiversity and Intellectual Property Law,* Ecologic Institute, November 2006, p. 8.
[57] FAO (2011), p. 63.
[58] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit.,*p. 8.

modification of plant habitats. Among such agricultural techniques are the use of external inputs such as fertilizers and pesticides, mechanization, large-scale irrigation systems etc.[59]

One phenomena particularly contributed to the loss of agricultural biodiversity. In the course of the Green Revolution many traditional crop varieties were being replaced by modern improved varieties developed through plant breeding.[60] According to the FAO, and based on many countries' reports, the replacement of the large scale of traditional and local landraces by a smaller number of modern improved varieties is the principal cause of genetic erosion.[61] Modern cultivars have replaced many traditional varieties, leading to the negligence and disappearance of many traditional varieties.[62] Moreover, the genes found in the traditional varieties aren't contained *in toto* in the modern varieties because the modern plant breeding practices and programs use less plant varieties to create improved crops.[63] The genetic base of modern varieties is thus more uniform than the genetically heterogeneous local varieties.[64] The pace and the intensity at which this replacement has occurred isn't the same in all regions of the world or for all crops.[65]

The increasing uniformity between and within crops is both the result of the farmers' choices of varieties and species and the amount and nature of varieties offered by breeders. Both play a key role in combatting uniformity, farmers should grow a diversity of cultivars and breeders should offer a wide range of locally adapted cultivars with a diverse genetic base to farmers.[66] However, their choices are determined by many factors, like the production and consumption conditions of the crop, agro-ecological factors, market and socio-economic factors as well as the availability of planting material.[67] Unfortunately, there are multiple market-oriented pressures that push towards crop specialization and genetic uniformity. It's the market that

[59] FAO (1996), p. 36.
[60] FAO (2011), p. 6.
[61] FAO (1996), p. 33.
[62] M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p 1.
[63] FAO (1996), p. 33.
[64] FAO (1996), p. 39.
[65] In the highly developed agricultural systems of North America and North-Western Europe many landraces of field crops have disappeared. While in the major centrs of genetic diversity (such as Southern Africa and the Middle East) traditional landraces are still very common. For crops with substantial breeding activities like wheat, rice and maize the replacement with modern cultivars is higher. However, even for those crops large areas are still planted with local varieties. It is thus not true that a complete disappearance of landraces has occurred; M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p. 1-3, 8.
[66] M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p. 12.
[67] G. MOORE and W. TYMOWSKI, *Explanatory Guide to the International Treaty on Plant Genetic Resources for Food and Agriculture*, IUCN Environmental Policy and Law Paper No. 57, IUCN Gland, Switzerland and Cambridge UK, 11 August 2005, p. 44.

decides what crops farmers should grow.[68] The market demand consists of only a small diversity of commercial high-yielding crops. To recall, four crops alone make up around 65% of the world's plant-based consumption.[69] Crop species that don't meet the consumer's demand become neglected.[70] The resulting inertia around particular varieties leads to crop specialization.[71] Farmers and plant breeders are incentivized to specialize in the production of a restricted amount of varieties which are most profitable to them. This is why they don't have sufficient incentive to produce a wide diversity of crops and thus why they only produce a few similar varieties of commercial crops.[72] Moreover, plant breeding companies have the economic incentive to produce only a few crop varieties that can be grown across different kind of climates and ecosystems rather than producing a large scale of varieties that require a range of different needs.[73] Again, this contributes to genetic erosion as it is a push for genetic uniformity.[74]

1.3.3 Other causes of agricultural biodiversity loss

Another global challenge jeopardizing the food security and causing diversity loss is the increase of outbreaks of unpleasant exotic species, pests, diseases and weeds due to the migration of people and import of goods.[75] The lack of sustainable resource management can also be identified as a factor of genetic erosion. An example of poor resource management is the overexploitation of plant genetic resources, which also includes overgrazing, reduced fallow periods in shifting cultivation and excessive harvesting.[76] Other causes of genetic erosion include the increasing population and urbanization of environments[77], environmental degradation due to pollution, deforestation and land clearance[78], inappropriate government policy and legislation, a decreasing demand for local products, change of food preferences, land use change, amongst others. Natural disasters and manmade conflicts which result in the large-scale displacement of farmers can also lead to the loss of agricultural diversity. [79]

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[68] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit*., p. 8.
[69] FAO (2001), p. 4.
[70] M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p. 11.
[71] FAO (1996), p. 39.
[72] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit.,* p. 8.
[73] FAO (1996), p. 39.
[74] M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p. 10.
[75] FAO (1996), p. 37.
[76] FAO (1996), p. 38.
[77] *Ibidem.*
[78] FAO (1996), p. 36-37.
[79] M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p. 3.

1.3.4 Genetic vulnerability

The loss of diversity between and within crops leads to a higher level of uniformity in cultivated crops. This is problematic as uniformity leads to an increase in the genetic vulnerability of crops. Genetic vulnerability is "when a widely planted crop is uniformly susceptible to a pest, pathogen or environmental hazard as a result of its genetic constitution, thereby creating a potential for widespread crop losses."[80] In other words, if large areas are planted with genetically uniform crop varieties, then this is dangerous as these varieties can uniformly be wiped out by a new pest or pathogen.[81] In contrary, if genetically heterogeneous varieties are planted then a new pest or pathogen will not affect all of them, resulting in less yield losses. The most famous example of severe yield losses due to genetic uniformity and genetic vulnerability is the potato blight pandemic in the 1840s in Ireland.[82]

Chapter 2. The Treaty as a response to the lack of food security through the management of plant genetic resources for food and agriculture

The object of the Treaty are the plant genetic resources for food and agriculture (PGRFA). First, it is convenient to explain what these resources are, through the definition given by the Treaty (2.1). Secondly, the importance of a diversity of these resources for food security and sustainable agriculture is addressed (2.2). Thirdly, the interdependence of countries on access to these resources is discussed (2.3). Lastly, we see how the Treaty's objectives are linked with the importance of PGRFA and the challenges these resources face (2.4).

2.1 Definition: plant genetic resources for food and agriculture

Biodiversity (short for biological diversity) refers to the diversity of life in all its manifestations (animal, plants and micro-organisms) and at all levels of biological organization (genetic level, species level and ecosystem[83] level).[84] Agricultural biodiversity (or agro-biodiversity) includes all components of biodiversity that constitute agricultural ecosystems. In other words, it

[80] FAO (1996), p. 30.
[81] FAO (1996), p. 31.
[82] A blight destroyed the potato crops in Europe and North America, which was possible because all potatoes were genetically uniform. One and a half million people died because of the famine following the blight pandemic; FAO (1996), p. 32; M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p. 10.
[83] An ecosystem is formed by all organisms living in an environment and interacting with each other as well as with the environment.
[84] FAO (2011), p. 38.

comprehends all animals, plants and micro-organisms which contribute to the functioning of the agricultural ecosystem and are of relevance to food and agriculture. Biodiversity englobes all genetic resources, both of animal and plant origin, whether of value for food and agriculture or not. Agro-biodiversity englobes genetic resources, both of animal and plant origin, that are of relevance for food and agriculture.[85] However, the Treaty addresses an even more specific kind of genetic resources: the plant genetic resources for food and agriculture. PGRFA are an important part of (agricultural) biodiversity.[86]

The Treaty defines PGRFA in Article 2 as follows: "any genetic material of plant origin of actual or potential value for food and agriculture". In order to understand this definition, it is necessary to break it down. Firstly, the definition states that PGRFA are any genetic material of plant origin, whereas genetic resources in general can also be from animal origin.[87] Genetic material of plant origin is defined by Article 2 of the Treaty as "any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity". Examples of plant genetic material are a seed, a leaf, a tuber, a piece of stem, pollen or sometimes even just a few plant cells. Genetic plant materials contain the functional units of heredity. The term "functional unit of heredity" isn't defined by the Treaty. However, it has been defined by the doctrine as meaning parts and components of the plant which are able to pass traits, such as genes or gene sequences (DNA).[88] The units of heredity, so genes and DNA, contain all the traits of the plant. For instance, the taste of the plant, the colour, the nutritional value, the drought resistance, the pest resistance, a high yielding, the plant architecture etcetera.[89] To resume, plant genetic resources are seeds, pollen or other plant genetic material in which the functional units of heredity of the plant are found, meaning genes and DNA, which in their turn contain all traits of the plant. Secondly, from the definition we can derive that only plant genetic resources which have (actual or potential) value for food and agriculture can be qualified as PGRFA and are subject to the provisions of the Treaty. The Treaty limits its scope to plant genetic resources which are used for food and agriculture, it does not apply to their use for any other purpose.[90] When we merge all of these elements together, PGRFA can be defined as the diversity of seeds, pollen and other genetic plant material contained in traditional

[85] FAO (2011), p. 42.
[86] G. MOORE and W. TYMOWSKI, *op. cit*., p.2.
[87] FAO (2011), p. 41.
[88] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 35.
[89] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 3; FAO (1996), p. 24.
[90] Almost all plant genetic resources are of potential value for food and agriculture due to the characteristics they can provide.; G. MOORE and W. TYMOWSKI, *op. cit.,* p. 35.

varieties, modern cultivars, crop wild species and CWR.[91] PGRFA contain the genes and DNA of a plant and thus all characteristics of the plant.

PGRFA are often referred to as germplasm or genetic resource material. They are often also simply called "crops" when referring to the entire genus or species of an agricultural plant and "crop genetic material" when referring to samples of genetic material. Crop diversity refers to the diversity of all PGRFA, meaning the diversity between and within agricultural crops and their reproductive parts.[92]

As will become clear throughout the research, PGRFA have a lot of distinctive features which strongly differentiates them from other components of biodiversity. Among these distinctive features of PGRFA are: their reliance on human management, the interdependence of countries on the access to them, their conservation in gene banks etc. However, what makes PGRFA so special is the fact that they are indispensable for agriculture and food security.[93]

2.2 Importance of a diversity of PGRFA for agriculture and food security

"*Conserving PGRFA is not just a question of preserving diversity of consumer choice for tomatoes or potatoes: it is a matter of ensuring that tomatoes and potatoes, and any other crops for that matter, can continue to be available to feed the world!*".[94]

The importance of PGRFA for food security and agriculture has been recognized on multiple occasions, for instance, in the World Food Summit Plan of Action, adopted at the close of the World Food Summit in Rome in 1966.[95] The Preamble of the Treaty notes the two most important functions of PGRFA: crop genetic improvement and insurance against environmental changes and future human needs.[96]

2.2.1 Crop genetic improvement

The Preamble states that PGRFA are indispensable for crop genetic improvement and that this improvement can be achieved through different means: farmers' selection, classical plant

[91] FAO (1996), p. 13.
[92] FAO (2011), p. 42.
[93] FAO (2011), p. 14.
[94] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 6.
[95] FAO, *World Food Summit - Plan of Action*, Rome Declaration on World Food Security Rome, 13-17 November 1996.; G. MOORE and W. TYMOWSKI, *op. cit.,* p. 4.
[96] Preamble of the Treaty, paragraph 6.

breeding strategies and modern biotechnologies.[97] Crop genetic improvement, or plant breeding, is the manipulation of traits in plants in order to develop new improved plant varieties with desired characteristics. PGRFA are the raw material needed for plant breeders and farmers to be able to improve the quality and productivity of their crops as they contain the desirable characteristics which are needed to improve a crop.[98]

Since the beginning of agriculture, about 10.000 years ago, plant diversity has enabled farming systems and agriculture to evolve. During many generations farmers have domesticated wild plants in order to produce crops for us to eat.[99] Wild plants have characteristics which make them unsuitable for agriculture like "the shattering of seeds-head prior to maturity".[100] Though selection, exchange and breeding farmers have made these wild plants suitable for agriculture. They have bred out the undesirable natural traits and bred in "agronomically desirable characteristics", for instance a bigger fruit size or pest and diseases resistance. Through this process of domestication farmers have developed a diversity of PGRFA and several thousands of traditional crops (farmers' varieties or landraces). A landrace is thus "the product of the breeding work of thousands of farmers over multiple generations".[101] This comes to show that, unlike most other genetic resources, cultivated crops and their PGRFA are essentially a manmade form of biodiversity and can't be found in nature. They are reliant on human management and without continued human intervention (human selection and conservation) most PGRFA will go back to wild and be of little value to food and agriculture.[102] The journey of crop improvement is by no means over. Still to this day farmers and plant breeders continue to improve their crops in order to build pest and disease resistances as well as protection against environmental changes.

Traditional small-scale farmers, who often cannot afford improved high-yielding crop varieties and external inputs (fertilizers, pesticides, seeds adapted to the environment etc.), improve their crops through the exchange of seeds and propagating material with the neighbouring farmers and careful selection of seeds with the best characteristics.[103] Genetic diversity between and

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[97] *Ibidem.*
[98] G. MOORE and W. TYMOWSKI, *op. cit*., p. 2
[99] G. MOORE and W. TYMOWSKI, *op. cit*., p. 23.; M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p. 3.
[100] G. MOORE and W. TYMOWSKI, *op. cit*., p. 2.
[101] *Ibidem.*
[102] FAO (2011), p. 14-15; G. MOORE and W. TYMOWSKI, *op. cit*., p. 2.
[103] Half of the world's farmers are resource-poor farmers, who have not been able to benefit from modern high-yielding varieties; FAO (1996), p. 25.; G. MOORE and W. TYMOWSKI, *op. cit*., p. 3.

within farmers' varieties (landraces) is very important, which is why small-scale farmers continuously try to maintain and increase such diversity through the exchange of seeds with other farmers.[104] Firstly, such diversity is important for farmers in order to increase the yield stability and the ability of their crops to adapt to new diseases and environmental changes. By using a diversity of landraces, farmers can decrease the crop vulnerability because the risk of crop failure caused by pest and diseases or environmental effects, such as drought, is spread. The losses suffered due to the failure of a particular variety are compensated for by the yield of other varieties. As such the farmers are protected against yield fluctuations.[105] Secondly, a wide diversity of landraces is also very important from a nutritional perspective. Farmer systems based on a wide diversity of crops provide for a more varied diet, which highly contributes to food security.[106] Thirdly, the specific PGRFA combinations of landraces provide certain desirable characteristics (drought resistance, pest resistance etc.) which enable these varieties to grow in their micro-environment and local conditions (which are sometimes poor conditions: arid soils, droughts, cold climates etc.).[107] Such combinations of genes can be very difficult or even impossible to reconstruct.[108] Hence why modern improved varieties often cannot grow in resource-poor environments as they're not locally adapted.[109] If we want to be able to continue growing crops in poor and variable environments, the maintenance of a diversity in farmers' varieties is primordial.

The diversity of genetic resources resulting from the farmers' selection processes over the last 10.000 years are the raw material for today's modern plant breeding. Modern plant breeding (scientific breeding) uses plant breeders techniques and modern biotechnologies. Maintaining genetic diversity is very important as the nature of the plant breeding process requires a wide diversity of PGRFA. The success of modern plant breeding depends on the breeders (farmers or professional plant breeders) having access to a wide range of plant varieties. The reason therefore is that the breeders, in order to produce improved varieties crops, need access to a lot of PGRFA to be able to find PGRFA with desirable characteristics, such as higher yields and pest resistance.[110] Sometimes they need to screen thousands of PGRFA in order to find

[104] G. MOORE and W. TYMOWSKI, *op. cit*., p. 3 and 23.
[105] G. MOORE and W. TYMOWSKI, *op. cit*., p. 3; FAO (1996), p. 24-25.
[106] FAO (1996), p. 26.
[107] FAO (1996), p. 25.
[108] FAO (1996), p. 24.
[109] FAO (1996), p. 25.
[110] G. MOORE and W. TYMOWSKI, *op. cit*., p. 24.

particular traits.[111] For instance, a breeder could inject the genes of a drought resistant plant species into a less resistant plant species. Through this breeding process farmers and plant breeders have developed a lot of new improved crop varieties, which are high-yielding, and thus have been able to highly increase the agricultural production the past century.[112] New improved plant varieties are the "product of generations of breeding by farmers and breeders".[113] The improvements in agricultural production through the breeding of new improved plant varieties has only been possible using the wide range of genetic material contained in the genetically heterogeneous farmers' varieties.[114] The characteristics contained in the PGRFA of the landraces have been introduced in many modern improved varieties.[115] In other words, landraces are the basis of the breeding of improved varieties, conferring resistances against pests and diseases as well as environmental changes, resulting in higher yields and thus food production. The use of genetic material from existing cultivars, CWR and external inputs (fertilizers, pesticides, crop management etc) has also contributed to the crop improvement.[116] PGRFA truly "allow us to optimize crops according to our needs" and therefore play a significant role in the present and future challenges of food security.[117]

Unfortunately, as previously addressed, market-oriented pressures towards genetic uniformity and the replacement of genetically heterogeneous farmers' varieties with genetically uniform modern crop varieties have led to the loss of PGRFA diversity at farm-level. This is very problematic as a diversity of farmers' varieties are very important, for the reasons mentioned above. The loss of diversity at farm-level also means certain plant genes which could be useful to develop new improved crop varieties and find resistances to new diseases are being lost.

2.2.2 PGRFA as insurance against environmental changes and future human needs

Secondly, the Preamble states that PGRFA are important as insurance against unpredictable environmental changes and future human needs.[118] We need crop varieties which are adapted to the global challenges we are currently facing and will face even stronger in the future. Firstly,

[111] G. MOORE and W. TYMOWSKI, *op. cit*., p. 3 and 24.
[112] G. MOORE and W. TYMOWSKI, *op. cit*., p. 3.
[113] *Ibidem.*
[114] In wheat, rice and maize about half of the increase in production can be ascribed to the breeding of new varieties through the use of PGRFA; FAO (1996), p. 29.
[115] FAO (1996), p. 18.
[116]Genes of wild species and relatives have been used for plant improvement as such genes can bring resistance against viruses, pests, diseases etc.; FAO (1996), p. 28 and 29; G. MOORE and W. TYMOWSKI, *op. cit*., p. 24.
[117] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit*., p. 6.
[118] Preamble of the Treaty, paragraph 6.

not only are there one billion people that face undernutrition, but with the demographic growth even more food will have to be produced. It is estimated that the global food production has to increase by 70% by 2050.[119] Hence why farmers and plant breeders will have to sustainably develop improved crop varieties which produce higher yields in order to furtherly increase the food production. Secondly, farmers and plant breeders need to produce crops which are more adapted and robust against the environmental changes, such as dryer and more extreme climates, as well as new weeds, pests and diseases, resulting from climate change. In order to do this farmers and breeders need access to diverse genetic materials as this makes it possible for them to select desirable characteristics and find resistances to new environmental conditions, diseases and pests.[120] Genetic diversity in the plant varieties grown is thus very important for both farming and plant breeding as it enables adaptation to changing climatic conditions and the reduction of vulnerability of crops to pests and diseases.[121]

The environmental changes, demographic growth, genetic erosion and increased crop vulnerability are evidence of the need of increased diversity in crops. To meet the present and future global challenges a continued and increased exchange of a wide range of PGRFA is required. The new varieties will need to incorporate more genetic diversity as well as being more adapted to the needs of local farmers and economies.[122]

2.3 The interdependence of countries on the access to PGRFA

Crops have one or more "centres of origin". A centre of origin is defined by the Treaty in Article 2 as the "geographical area where a plant species, either domesticated or wild, first developed its distinctive properties". For a crop, the centre of origin is the area where the crop originally was domesticated through selection and breeding by farmers.[123] The Russian plant explorer, N.I. VAVILOV, was the first to say that the genetic diversity of crops is not uniformly distributed between all of the world's countries.[124] He was right, crops have one or more centres of diversity. A "centre of crop diversity" is defined by Article 2 as "a geographic area containing a high level of genetic diversity for crop species in *in situ* conditions". It's the area where the

[119] FAO, *How to feed the world in 2050*, October 2009, p. 8.
[120] G. MOORE and W. TYMOWSKI, *op. cit*., p. 3-4.
[121] M. VAN DE WOUW, C. KIK, T. VAN HINTUM, T. VAN TREUREN and B. VISSER, *op. cit*., p. 10.
[122] G. MOORE and W. TYMOWSKI, *op. cit*., p. 4.
[123] In many cases the centre of origin is difficult to define. It can be that different species of the same crop have been domesticated in different places.; FAO (1996), p. 20.
[124] G. MOORE and W. TYMOWSKI, *op. cit*., p. 23.; FAO (1996), p. 20.

greatest natural diversity of a crop can be found.[125] For many crops the centres of origin and centres of diversity are located in developing countries, where many resource-poor farmers are located.[126]

The fact that the genetic diversity of a crop isn't uniformly distributed between all countries has created interdependence of all countries and regions to the access to that genetic diversity. We want to be able to include crops from other parts of the world into our diets. We want to improve crops, which sometimes requires access to plants from 20 to 30 different countries. We also want access to the crop species' centres of diversity in order to find certain characteristics and natural resistances against the new diseases and pests resulting from the environmental changes.[127] This interdependence has led PGRFA to be exchanged for centuries between countries, regions, local farmers, professional plant breeders, research institutes etc.[128] For instance, potatoes originated in the Andes in Latin America and are now staple crops worldwide. The agricultural development of all countries and regions depends on the access to the other countries' and regions' PGRFA.[129] No country is completely self-sufficient. For the major food crops, the degree of dependence on PGRFA from other regions is over 50% for most regions.[130]

This history of distribution of agricultural genetic diversity has led to the development of secondary centres of diversity for some crop species. This means that the centre of origin of a crop doesn't always corresponds to the centres of diversity of that crop.[131] Nowadays many crops have secondary centres of diversity that sometimes contain an even higher level of diversity than the original centre of diversity.[132] Most countries also have large gene banks containing an immense amount of PGRFA. The genetic diversity of some of the major crops can be found in these gene banks all over the world, even at the opposite of their centre of

[125] G. MOORE and W. TYMOWSKI, *op. cit*., p. 23.
[126] Vavilov identified eight main centres of genetic diversity; China, India, Central Asia, Near East, the Mediterranean, Ethiopia, Central America, South America (Peru, Ecuador, Bolivia); G. MOORE and W. TYMOWSKI, *op. cit*., p. 23.; FAO (1996), p. 20.
[127]This was for example the case during the Irish potato famine in the 1840's, during which a blight affected the potatoes in Europe and natural resistances had to be found in the centre of origin of the potatoes (Latin America).; G. MOORE and W. TYMOWSKI, *op. cit*., p. 4.
[128] G. MOORE and W. TYMOWSKI, *op. cit*., p. 4.
[129] G. MOORE and W. TYMOWSKI, *op. cit*., p. 5 and 6.
[130] Interdependence in Central Africa ranges from 67% to 94% and in the Indian Ocean countries from 85% to 100%. No country in the study was proven self-sufficient; X. FLORES-PALACIOS, *Contribution to the Estimation of countries' interdependence in the area of plant genetic resources*, Background Study Paper No. 7, FAO, 1998; G. MOORE and W. TYMOWSKI, *op. cit*., p. 5 and 6.
[131] FAO (1996), p. 20 and 22.
[132] G. MOORE and W. TYMOWSKI, *op. cit*., p. 23.

origin. However, this doesn't mean they don't need access to each other's resources anymore. The plant breeders and farmers from different countries and regions are still heavily interdependent on the access to each other's PGRFA.

The high degree of interdependence comes to show how important it is to legally guarantee a continued access to PGRFA of other countries and regions.[133]

2.4 The objectives of the Treaty

All of the above elements demonstrate how important a diversity of PGRFA is for agriculture and food security, as well as the importance of the access of farmers and plant breeders to such diversity. Food security "highly depends on the conservation, exchange and wise use of agricultural biodiversity and the genetic resources that constitute such diversity".[134] This is even more true with the environmental changes, growing human population and biodiversity loss we are facing. These are the main reasons that called for the adoption of an international agreement which would ensure the conservation of PGRFA and facilitate access to PGRFA for farmers, breeders and researchers.[135] The special nature of PGRFA implies that PGRFA also have specific needs and require specific solutions. This is recognized in the Preamble of the Treaty: "[Contracting Parties] convinced of the special nature of plant genetic resources for food and agriculture, their distinctive features and problems needing distinctive solutions".[136] The Treaty is the first and only legally binding international agreement with the overall goal of achieving food security through the management of crop diversity and dealing with the specific needs of PGRFA.[137]

In order to contribute to the achievement of global food security, the Treaty has three main objectives which are listed in Article 1.1: the conservation of PGRFA, the sustainable use of PGRFA and the fair and equitable sharing of the benefits arising out of their use. The Treaty provides Contracting Parties with the legal framework, legal measures and mechanisms, necessary to take actions for the conservation, sustainable use and access to their crop diversity.[138] For instance, the Treaty establishes a mechanism facilitating international

[133] G. MOORE and W. TYMOWSKI, *op. cit*., p. 5.
[134] J. ESQUINAS-ALCAZAR, C. FRISON and F. LOPEZ, *op. cit.,* p. 3.
[135] FAO (2011), p. 16.
[136] Preamble of the Treaty, paragraph 1.
[137] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit.,* p. 6; FAO (2011), p. 14.
[138] FAO (2011), Foreword.

exchanges of the world's most important PGRFA and a funding strategy to support projects for their conservation and sustainable use. All of the Treaty's measures and mechanisms are analysed in depth in the second part of the research.

Chapter 3. The historical journey

Like any other international agreement, the adoption of the Treaty didn't occur overnight. States can often be reticent to ratify a legally binding instrument as it implies commitment and liability. In this chapter we take a brief look at the most important steps (3.1) that culminated in the adoption of the Treaty in 2001 (3.2).

3.1 Steps towards a legally binding treaty

As the following paragraphs will make clear, multiple policy developments, institutions and legal instruments concerning plant genetic resources had to take place in order for countries to agree in adopting an international legally binding treaty. The Treaty is the outcome of a long and difficult political and legal journey characterized by many and long negotiations.[139]

3.1.1 Beginning phases of international dialogue and cooperation

The development of agriculture and agricultural biodiversity has been around for a long time already. "The history of exchange of PGRFA represents somewhat the history of humanity".[140] Over time, mankind has become more aware of the importance of the plant genetic resources. From early times people have travelled in order to find new plans to eat. 10.000 years ago humans began farming, which resulted in the domestication of plants and the spread of crops. In the last millennia further cultural interactions resulted in the global transfer of crops and PGRFA.[141]

In the 19th century, with the discoveries of Charles Darwin and the food crisis in Europe, people recognized that genetic diversity in agriculture is primordial to ensure food security. Hence why governments started to actively take measures to ensure access to plant genetic resources. From

[139] J. ESQUINAS-ALCAZAR, A. HILMI and I. LOPEZ NORIEGA, *A brief history of the negotiations on the International Treaty on Plant Genetic Resources for Food and Agriculture*, in M. HALEWOOD, I. LOPEZ NORIEGA and S. LOUAFI (Eds.), *Crop Genetic Resources as a Global Commons: Challenges in International Law and Governance* (p. 135-149), Routledge, Oxon, 12 November 2012, p. 135.
[140] J. ESQUINAS-ALCAZAR, C. FRISON and F. LOPEZ, *op. cit.*, p. 19.
[141] J. ESQUINAS-ALCAZAR, C. FRISON and F. LOPEZ, *op. cit.*, p. 6.

the 20th century onward international institutions were established in order to promote the conservation of such diversity. In 1945 the Organization for Food and Agriculture (FAO) was created. The FAO is a specialized agency of the UN which adopts instruments, strategies and plans of action to eradicate hunger and ensure food security for all. The FAO, among other international organizations, worried about the genetic vulnerability and genetic erosion. Hence why the FAO created the Panel of Experts in Plant Exploration and Introduction in 1965, which published guidelines for the conservation and exchange of plant genetic resources for almost ten years. The FAO also held multiple technical conferences in order to address specific matters concerning plant genetic resources. In 1974, the Consultative Group on International Agricultural Research (CGIAR) created the International Board of Plant Genetic Resources (IBPGR).[142] The IBPGR also took measures to ensure the conservation and collection of plant genetic resources. The 70's were filled with the creation of institutions and programs with that same goal.[143]

In 1961 the International Union for the Protection of New Varieties of Plants (UPOV) was created and in 1974 the International Plant Genetic Resources Institute (IPGRI), both to support the conservation of plant genetic resources.[144]

From 1979 onward progression was made when the countries party to the FAO sat around the table at the Twentieth FAO Conference to discuss policy changes and new instruments regarding the conservation of plant genetic resources.[145] The developing countries voiced two concerns during the Conference. Firstly, the diversity of plant genetic resources is the broadest in (sub)tropical places, which mostly are the territory of developing countries. However, it is mostly companies from developed countries that collect and store those resources in gene banks. The question during the Conference was: do those resources belong to the country of origin (mostly developing countries), the country in which they are stored (mostly developed countries) or mankind in general? Secondly, new improved varieties developed by plant breeders and researchers are the result of applying technology to genetic resources. The developing countries didn't agree with the fact that the rights of the providers of the technology were recognized (plant breeders' rights, patents etc.), but not the rights of the farmers who

[142] The IBPGR is now known as Bioversity International.
[143] J. ESQUINAS-ALCAZAR, A. HILMI and I. LOPEZ NORIEGA, *op. cit.*, p. 136.
[144] J. ESQUINAS-ALCAZAR, C. FRISON and F. LOPEZ, *op. cit*., p. 6.
[145] The FAO Conference, in which all member states to the FAO are represented, is the highest decision-making body in the FAO; FAO Conference, *Report of the Twentieth Session of the FAO Conference*, Rome, 10-28 November 1979; J. ESQUINAS-ALCAZAR, A. HILMI and I. LOPEZ NORIEGA, *op. cit.*, p. 136.

provide these resources. Although no answers were agreed upon during the FAO Conference, these two questions were at the basis of the difficult negotiations of the following years and of the Treaty and its multilateral system of access and benefit sharing. During the FAO Conference in 1979, the Spanish delegation proposed that an international agreement on plant genetic resources should be adopted as well as a germplasm bank under the jurisdiction of the FAO in order to resolve these matters. However, no resolution was adopted.[146] It wasn't until the Twenty-second Session of the FAO Conference in 1983, after long and difficult negotiations, that both the International Undertaking on Plant Genetic Resources for Food and Agriculture (IU) and the Commission on Genetic Resources for Food and Agriculture (CGRFA) were created.[147] The CGRFA provided for a permanent intergovernmental forum for governments to discuss about the agreed interpretations of the provisions of the IU and was responsible for the monitoring and supervision of the IU.[148]

3.1.2 International Undertaking on Plant Genetic Resources for Food and Agriculture

The IU, which doesn't exist anymore, was the first comprehensive international agreement dealing specifically with PGRFA, promoting their conservation and sustainable use.[149] The IU is based on the principle that PGRFA are the "heritage of mankind and consequently should be available without restriction" (Article 1 of the IU). In line with this principle, Article 5 of the IU states that governments and institutions adhering to the IU should allow access to samples of the PGRFA under their control when the resources have been requested for the purposes of scientific research, plant breeding or conservation. These samples should be made available free of charge, on the basis of mutual exchange or on mutually agreed terms.[150] Although 113 countries adhered to the IU, many countries expressed reservations and a number of important developed countries didn't support the IU.[151] The reason therefore is that the IU raised concerns from both developed and developing countries. The developed countries were resilient towards the IU as PGRFA, as defined in the IU, also include "special genetic stocks (including elite and current breeder's lines and mutants)" (Article 2.1 (a) (v) of the IU). This implies that commercial breeds should be available without restriction as well, which compromises the

[146] J. ESQUINAS-ALCAZAR, A. HILMI and I. LOPEZ NORIEGA, *op. cit.*, p. 137.
[147] FAO Conference, *Report of the Twenty-second Session of the FAO Conference*, Rome, 5-23 November 1983; FAO Conference, Resolution 8/83, *International Undertaking on Plant Genetic Resources for Food and Agriculture*, Rome, 23 November 1983.
[148] G. MOORE and W. TYMOWSKI, *op. cit*., p. 7.
[149] J. ESQUINAS-ALCAZAR, A. HILMI and I. LOPEZ NORIEGA, *op. cit.*, p. 138.
[150] G. MOORE and W. TYMOWSKI, *op. cit*., p. 7.
[151] For instance, Australia, Canada and USA.

intellectual property rights of companies in the seed industry. This led to concerns from the developed countries about the compatibility of the IU with the Plant Breeders' rights under the UPOV. Another concern was related to the fact that there was no provision in the IU which guaranteed farmers' rights to reward farmers for their important contributions to the conservation and improvement, through selecting and breeding, of PGRFA. This raised a feeling of inequality among the farmers as the IU did recognize and reward the contributions of plant breeders and researchers to the development of PGRFA through Plant Breeders' rights, patents etc. There was also a growing concern about the IU not fully reflecting the sovereignty of countries over their resources.[152] Those deficiencies of the IU are the reasons why the IU was adopted as a non-binding instrument instead of a binding instrument like it was originally supposed to be.

In order to address those concerns, the FAO Conference adopted a series of Agreed Interpretations of the IU.[153] The First Agreed Interpretation, adopted under Resolution 4/89, recognized that Plant Breeders' Rights as understood under the UPOV weren't incompatible with the IU. It also recognized the enormous contributions of farmers to the conservation and development of PGRFA and introduced for the first time the concept of farmers' rights as reward for these contributions.[154] The Second Agreed Interpretation, adopted under Resolution 5/89, further defined the concept of farmers' rights as: "rights arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources, particularly those in the centres of origin and diversity. These rights are vested in the International Community, as trustee for present and future generations of farmers, for the purpose of ensuring full benefits to farmers, and supporting the continuation of their contributions".[155] In the Third Agreed Interpretation, adopted under Resolution 3/91, the sovereign rights of countries over PGRFA were reaffirmed, meaning PGRFA should be available at the discretion of their developers during the period of development. An international fund for PGRFA was also agreed upon to implement the farmers' rights.[156] These resolutions were integrated in the IU as annexes.

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[152] G. MOORE and W. TYMOWSKI, *op. cit*., p. 6.
[153] G. MOORE and W. TYMOWSKI, *op. cit*., p. 8.
[154] FAO Conference, Resolution 4/89, *Agreed Interpretation of the International Undertaking on Plant Genetic Resources*, Twenty-fifth Session of the FAO Conference, Rome, 29 November 1989.
[155] FAO Conference, Resolution 5/89, *Farmers' Rights*, Twenty-fifth Session of the FAO Conference, Rome, 29 November 1989.
[156] FAO Conference, Resolution 3/91, *Annex 3 to the International Undertaking on Plant Genetic Resources,* Twenty-sixth Session of the FAO Conference, Rome, 25 November 1991.

3.1.3 Convention on Biological Diversity

In parallel with the development of the IU, another antecedent to the Treaty was negotiated from 1988 onward: the Convention on Biological Diversity (CBD).[157] The CBD was adopted at the Nairobi Conference for the Adoption of the Agreed Text of the CBD in 1992. It was the first international legally binding instrument regarding biological diversity. Its provisions promote the sustainable use, the sharing and the conservation of genetic resources. However, the CBD covers all forms of biodiversity. It doesn't specifically focus on agricultural biodiversity and doesn't sufficiently address the specific needs of PGRFA and the agricultural sector, like the access to *ex situ* collections as well as the realization of the farmers' rights.[158] The CBD is based on the principle of national sovereignty over plant genetic resources, which clearly stems from the common heritage principle of the IU.[159]

This meant the journey still wasn't over. On one hand there was the IU which couldn't sufficiently protect the interests of the agricultural sector because of its non-binding character. On the other hand there was the CBD which is binding, but didn't accord enough attention to the specific interests of the agricultural sector and needs of PGRFA. However, at the Nairobi Conference for the Adoption of the Agreed Text of the CBD in 1992, a Resolution on agricultural biodiversity was also adopted.[160] In adopting the Agreed Text of the CBD, countries also adopted this Resolution. The Resolution recognizes the need to seek solutions for PGFRA matters, particularly the access to *ex situ* collections and the farmers' rights.[161] In the Resolution the FAO is requested to address those matters and to revise the IU in harmony with the CBD. In 1993, the FAO Conference acted upon the Resolution's requests and adopted Resolution 7/93 for the revision of the IU.[162] The FAO Conference also asked the FAO to provide a forum in the CGRFA for governments to discuss about the revision of the IU in harmony with the CBD as well as about the issue of farmers' rights and access to PGRFA, including *ex situ*

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[157] UN, *Convention on Biological Diversity*, Rio de Janeiro, 5 June 1992, No. 30619 (entered into force 29 December 1993).
[158] G. MOORE and W. TYMOWSKI, *op. cit*., p. 10; J. ESQUINAS-ALCAZAR, A. HILMI and I. LOPEZ NORIEGA, *op. cit.*, p. 141.
[159] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit.,* p. 14.
[160] Nairobi Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity, Resolution 3 of the Nairobi Final Act, *The Interrelationship between the Convention on Biological Diversity and the Promotion of Sustainable Agriculture*, Nairobi, 22 May 1992.
[161] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit.,* p. 14; ESQUINAS-ALCAZAR, A. HILMI and I. LOPEZ NORIEGA, *op. cit.*, p. 141.
[162] FAO Conference, Resolution 7/93, *Revision of the International Undertaking on Plant Genetic Resources*, Twenty-seventh Session of the FAO Conference, Rome, 22 November 1993.

collections.[163] As a result of those discussions, both the developed and developing countries agreed the IU should be transformed into a legally binding instrument. The reason thereof was that they knew such binding agreement would be a legal warrant for the conservation of PGRFA and the fair and equitable access to them for research and genetic improvement.[164] This marked the beginning of the negotiations of the actual Treaty.

3.2 The adoption of the Treaty

The negotiations of the Treaty started in November 1994 in Rome at the first extraordinary session of the CGRFA.[165] During this first negotiation session, which lasted for 5 days, three negotiation stages were decided upon.[166] Stage one would be to revise the IU in harmony with the CBD. Stage two would be to address the following issues: the access on mutually agreed terms to PGRFA, including *ex situ* collections not addressed by the CBD, and the realization of the farmers' rights. Stage three would be to determine the legal status of the revised IU. Should it be voluntary or binding? Should it be an independent treaty or a protocol to the CBD? After this first negotiation session, the CGRFA came together more extraordinary sessions, regular sessions and inter-sessional group meetings to discuss some specific issues.

Although the negotiations were originally supposed to last two years, they lasted for seven years instead.[167] The Treaty was finally adopted during the Thirty-first Session of the FAO Conference on the 3th of November 2001 through Resolution 3/2001, with 116 votes and 2 abstentions (the United States of America and Japan).[168] It then took two and a half years for the Treaty to enter into force on the 29th of June 2004. As for right now there are 147 contracting parties to the Treaty, including the European Union (EU).[169] The Treaty is the first legally binding international agreement focussing on agricultural biodiversity specifically, dealing with the specific needs of PGRFA. It is the outcome of a long legal and political journey.

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[163] ESQUINAS-ALCAZAR, A. HILMI and I. LOPEZ NORIEGA, *op. cit.*, p. 142.
[164] ESQUINAS-ALCAZAR, A. HILMI and I. LOPEZ NORIEGA, *op. cit.*, p. 142.
[165] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit.,* p. 14.
[166] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit.*, p. 126.
[167] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit.,* p. 14.
[168] FAO Conference, Resolution 3/2001, *Adoption of the International Treaty on Plant Genetic Resources for Food and Agriculture and Interim Arrangements for its Implementation,* Thirty-first Session of the FAO Conference, Rome, 3 November 2001, No. 43345 (entered into force 29 June 2004); G. MOORE and W. TYMOWSKI, *op. cit*., p. 1.
[169] An updated list of the contracting parties is available on the official website of the FAO: < www.fao.org/plant-treaty/countries/membership/en/> (accessed 21 March 2020).

PART 2 – LEGAL ASSESSMENT OF THE TREATY

The second part of the research consists of a detailed analysis of the provisions of the Treaty and how they have to be implemented by the Contracting Parties.

The Treaty starts off with a Preamble, of which some of the paragraphs already have been analyzed in the first part of this thesis. The Preamble in itself isn't binding, but it does lay down the overall principles which lie at the base of the legally binding provisions of the Treaty.[170] The remaining paragraphs of the Preamble will be analyzed throughout the analysis of the actual provisions of the Treaty.

The Treaty is quite short, it contains 35 articles which are divided into seven parts. These parts are respectively: introductive provisions (Chapter 1), general provisions (Chapter 2), farmers' rights (Chapter 3), the multilateral system of access and benefit-sharing (Chapter 4), supporting components (Chapter 5), financial provisions (Chapter 6) and institutional provisions (Chapter 7). This division in parts gives the Treaty a clear structure.

Chapter 1. Introductive Provisions of the Treaty (Articles 1-3)

Article 1 of the Treaty consists of two paragraphs. The first paragraph, as addressed previously, lists the three objectives of the Treaty: the conservation of PGRFA, the sustainable use of PGRFA and the equitable sharing of the benefits arising out of their use. The provisions of the Treaty are meant to implement those objectives. The second paragraph states that these objectives have to be attained by closely linking the Treaty to the FAO and to the CBD.

In Article 2 of the Treaty eight key terms are defined and given a clear specific meaning. This enables the parties to have an agreed interpretation and understanding of the provisions and their scope and as such avoid any misconceptions.[171] Those terms are regularly reoccurring throughout the Treaty's text, meaning their given definitions strongly determine the scope of the Treaty. The manner in which a term is defined "can and will affect the nature and scope of the obligations assumed and rights accorded under the Treaty".[172] Those definitions will be addressed throughout the research paper when the terms in question come up. Article 2 specifically states that "these definitions are not intended to cover trade in commodities". Indeed, Article 3 of the Treaty states the scope of the Treaty and reads as follows: "This Treaty

[170] G. MOORE and W. TYMOWSKI, *op. cit*., p. 19.
[171] G. MOORE and W. TYMOWSKI, *op. cit*., p. 33.
[172] *Ibidem.*

relates to plant genetic resources for food and agriculture". In other words, the Treaty applies to all PGRFA as defined in Article 2 which, as a reminder, doesn't include plants and crops as "commodities" (meaning products that can be bought and sold).[173]

Chapter 2. General Provisions (Articles 5-8)

Article 4 states that "each Contracting Party shall ensure the conformity of its laws, regulations and procedures with its obligations as provided in this Treaty". Although very important, this article is quite clear and doesn't require much commentary. As already addressed, the Treaty is legally binding, so naturally the Contracting Parties have to conform to its obligations. However, it doesn't imply that in any case a Contracting Party must adopt new legislation or strategies. If the existing legislative framework is adequate and sufficient to implement the Treaty's obligations, then new laws, regulations or procedures aren't required.[174] The other general provisions require more attention.

2.1 The Conservation, Exploration, Collection, Characterization, Evaluation and Documentation of PGRFA (Article 5)

In the first part of the research the importance of maintaining a high level of crop diversity was shown. This is why one of the Treaty's three objectives, pursuant Article 1.1, is the conservation of PGRFA. The ultimate purpose of PGRFA conservation is to be able to use the PGRFA in the present and future for agricultural research, plant breeding and cultivation in order to ensure global food security. In this section the provisions of Article 5 of the Treaty, which is devoted to the conservation of PGRFA, will be analyzed.

First, it is necessary to understand the meaning of conservation in the context of the Treaty. Secondly, the provisions of Article 5 will be analyzed.

2.1.1 Ex situ and in situ conservation

The FAO has defined gene resources conservation as "the conservation of species, population, individuals or parts of individuals, by *in situ* or *ex situ* methods, to provide a diversity of genetic

[173] G. MOORE and W. TYMOWSKI, *op. cit*., p. 33.
[174] G. MOORE and W. TYMOWSKI, *op. cit*., p. 39.

material for present and future generations".[175] There are two main methods of conservation of crop diversity: *in situ* and *ex situ* conservation. The Treaty aims at promoting both of these methods.

Ex situ conservation is defined by Article 2 as "the conservation of plant genetic resources for food and agriculture outside their natural habitat". It is the conservation of PGRFA in gene banks or botanical gardens.[176] There are different types of gene banks, depending on the type of plant material being stored and the purpose of conservation. Most PGRFA are conserved through the storage of seeds (containing the PGRFA) in a dry and cold environment in seed banks. The reason therefore is that seeds are the easiest form of plant material to collect and can be conserved for a long period of time in such environment.[177] Crops with seeds which aren't adapted to be stored in seed banks (mostly seeds from tropical crops such as coconut, mango etc.) and crops that are vegetatively propagated (meaning crops which don't propagate by seeds, for instance roots) are most commonly conserved in field gene banks. These are collections of living plants in fields or green houses.[178] An alternative method to field gene banks to conserve vegetatively propagated crops and crops with recalcitrant seeds is *in vitro* gene banks. This is the maintenance of cells and plant tissues in a sterile, pathogen-free environment, usually in a test tube or glass jar.[179] Cryopreservation is a specific form of *in vitro* storage where tissue is stored at extremely low temperatures (-196 degrees Celsius) in liquid nitrogen. This guarantees long-term preservation of PGRFA in a genetically unaltered state.[180] Last but not least there are also DNA banks which stores DNA material. DNA storage is becoming an increasingly important method of conservation of PGRFA.[181] Botanical gardens maintain PGRFA through collections of living plants in gardens. Botanical gardens strongly focus on wild plant species as well as CWR.[182] Even though both botanical gardens and field gene banks conserve PGRFA in respectively gardens and fields, they are considered *ex situ* conservation techniques because they don't conserve the PGRFA in their natural habitat or surroundings where they have developed their distinctive properties.[183]

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[175] FAO, *Conservation and Sustainable Use under the International Treaty*, Second Educational Module in the Educational Modules on the International Treaty Series, Rome, January 2012, p. 49. Hereafter: FAO (2012).
[176] FAO (2012), p. 12.
[177] FAO (2012), p.12.
[178] FAO (2012), p. 13.
[179] FAO (2012), p. 14.
[180] FAO (2012), p. 15.
[181] FAO (2012), p. 15-16.
[182] FAO (2012), p. 16.
[183] FAO (2012), p. 17.

The Second Report on the State of the World's PGRFA dedicates a whole chapter to the state of *ex situ* conservation.[184] According to this report there are currently 1750 gene banks worldwide, conserving altogether about 7.4 million PGRFA accessions.[185] Most of these are conserved in seedbanks. Of these 7.4 PGRFA accessions, 6.6 are conserved by national government gene banks, 45% of which is held in only seven countries.[186] Gene banks are maintained by public or private institutions. There are also more than 2500 botanical gardens around the world, growing around 80.000 plant species.[187]

In situ conservation is defined by Article 2 as "the conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings and, in the case of domesticated or cultivated plant species, in the surroundings where they have developed their distinctive properties". Put more simply, it's the conservation of PGRFA in their natural habitat. From this definition two main methods of *in situ* conservation can be derived: *in situ* conservation in the strict sense and on-farm conservation.[188]

In situ conservation in the strict sense includes both the conservation of entire ecosystems and natural habitats as well as the conservation of wild plant species and CWR in the natural habitat where they evolved. *In situ* conservation can thus be targeted at the wild PGRFA species, but also at the entire habitat or ecosystem in which they occur.[189] *In situ* conservation is very important for wild plant species and CWR as these are difficult to conserve in gene banks. It enables them to evolve under natural conditions and have interactions which generate new biodiversity.[190] The most commonly used method for *in situ* conservation is to protect and conserve the natural habitats of those plants by declaring them protected areas and taking appropriate measures to ensure their conservation.[191] There are different types of protected areas depending on the purpose of the conservation: strict nature reserves, wilderness areas, national parks, protected landscapes, habitat or species management areas etc.[192] There are also a lot of wild plant species and CWR which exist outside of the conventional protected areas.

[184] FAO, *The Second Report on State of the World's Plant Genetic Resources for Food and Agriculture*, Rome, 2010. Hereafter: FAO (2010).
[185] FAO (2010), p. 4.
[186] FAO (2010), p. 55.
[187] *Ibidem.*
[188] FAO (2012), p. 18.
[189] FAO (2012), p. 18.
[190] FAO (2012), p. 58.
[191] FAO (2012), p. 18.
[192] FAO (2012), p. 19.

For instance, cultivated fields, grasslands, orchards, recreation areas and roadsides sometimes contain a significant CWR diversity.[193]

On-farm conservation, also often called on-farm management, is "the continuous cultivation and management of a diverse set of populations by farmers in the agro-ecosystems where a crop has evolved".[194] Basically, it is the conservation and management of cultivated crops and their wild and weedy relatives by farmers in the agro-ecosystems where they have developed their distinctive properties or where they are adapting to new conditions. On-farm conservation and management imply that the PGRFA are being conserved by being cultivated, adapted and improved (conservation through use).[195]

In situ conservation and *ex situ* conservation are complementary methods. The reason for this complementarity is that they are fundamentally different.[196] *Ex situ* conservation "implies the conservation of genetic material outside of the 'normal' environment where the species has evolved and aims to maintain the genetic integrity of the material at the time of collecting, whereas *in situ* conservation is a dynamic system which allows the biological resources to evolve and change over time through natural or human-driven selection processes".[197] Because of these differences and complementarity it is important that crop diversity is conserved both *in situ* and *ex situ*. This is the reason why Treaty has opted for a complementary conservation strategy, meaning a conservation strategy which involves a combination of *in situ* and *ex situ* techniques.[198] Article 5 and 6 of the Treaty refer to both methods. Such a strategy leads to an optimum sustainable conservation of PGRFA diversity, in contrary to one single conservation strategies.[199]

2.1.2 Article 5 of The Treaty

The objective of conservation of the Treaty is specifically addressed in Article 5 of the Treaty. The full title of Article 5 is the "Conservation, Exploration, Collection, Characterization,

[193] FAO (2012), p. 21.
[194] FAO (2012), p. 22.
[195] FAO (2012), p. 61.
[196] FAO (2012), p. 25.
[197] FAO (2012), p. 25.
[198] FAO (2012), p. 26.
[199] FAO (2012), p. 26.

Evaluation and Documentation of PGRFA". Exploration, collection, characterization, evaluation and documentation are integral elements of effective conservation.[200]

Pursuant Article 5.1 of the Treaty, each Contracting Party shall, subject to national legislation, and in cooperation with other Contracting Parties where appropriate, promote an integrated approach to the exploration, conservation and sustainable use of PGRFA. According to this Article, each Contracting Party has the obligation to promote an "integrated approach to the exploration, conservation and sustainable use of PGRFA". In that way, Article 5.1. ties the obligations of Article 5 (the conservation and exploration of PGRFA) and Article 6 (sustainable use of PGRFA) together.[201] The FAO has insisted on the fact that "Article 5 and 6 are two sides of the same coin in order to achieve the Treaty's overall goal of global food security".[202] In order for us to keep using crop diversity there needs to be measures of conservation, and the purpose of conservation only stands if PGRFA are used in a sustainable manner. The measures concerning conservation (Article 5) and the measures concerning sustainable use (Article 6) have to be understood as a continuum.[203] This implies that "none of the provisions of these two articles can stand alone: all of the actions required must form part of an integrated approach if they are to be effective". [204] The Article applies to both *in situ* conservation and *ex situ* conservation. Through the phrase of "subject to national legislation", the Article recognizes the principle of national sovereignty. So while a Contracting Party has the obligation to promote an integrated approach, the way in which the Contracting Party wants to fulfill this obligation is subject to its discretion.[205] The Article then continues by listing three steps towards conservation and three conservation methods which the contracting parties "shall, as appropriate" take. Again, the phrase "as appropriate" indicates that although those six tasks figure as important elements for the Contacting Parties in order to achieve the Article's obligation, each Contracting Party has a broad discretion in the way of applying those methods.[206]

Article 5.1(a) states that Contracting Parties shall survey and inventory PGRFA, taking into account the status and degree of variation in existing populations, including those that are of

[200] FAO (2012), p. 49.
[201] G. MOORE and W. TYMOWSKI, *op. cit.*, p. 41.
[202] FAO (2012), p. 49.
[203] *Ibidem.*
[204] G. MOORE and W. TYMOWSKI, *op. cit*., p. 41.
[205] *Ibidem.*
[206] *Ibidem.*

potential use and, as feasible, assess any threats to them. This paragraph concerns the "exploration" as meant in Article 5.1. Exploration means the "act of searching a particular plant species to establish its range of variability and geographic distribution".[207] Exploration, through surveys and inventories, is the first step of both *in situ* and *ex situ* conservation of PGRFA. It's impossible for the Contracting Parties to provide for adequate conservation and sustainable use strategies and policies if they ignore what plant resources exist on their territories as well as the scope of the existing conservation. Both surveys and inventories are necessary in order to develop such strategies and policies. Surveys enable them to identify which areas contain a natural high plant genetic diversity and the current state of the *ex situ* and national collections. Inventories are necessary to ensure complementary between *in situ* and *ex situ* conservation.[208] The emphasis of the paragraph on the status and degree of variation in existing populations reflects the importance of both intra-specific and interspecific diversity of PGRFA for plant breeding.[209] The paragraph also requires Contracting Parties to assess threats to PGRFA. As was addressed in the first part of this research, there are multiple threats to crop diversity. The aim of the Treaty is to respond to such threats by promoting the sustainable use and conservation of PGRFA. There is a link to be made here with Article 5.1b) which requires to collect PGRFA under threat and Article 5.2 which places a positive obligation on Contracting Parties to minimize or eliminate threats to PGRFA.[210]

Contracting Parties also have to promote the collection of PGRFA and relevant associated information on those plant genetic resources that are under threat or are of potential use (Article 5.1(b)). The collection of PGRFA is the second step towards the conservation of PGRFA. In the context of the Treaty collection means "collecting crop genetic resources from natural and agricultural ecosystems".[211] Most PGRFA collections are held in seed banks, however botanical gardens, field gene banks and *in situ* conservation also contain large PGRFA collections.[212] The paragraph also says that relevant associated information about these PGRFA should be collected. There is no definition of what relevant associated information is, however the FAO has said it's the information collected through characterization, evaluation and documentation (Article 5.1e).[213] Moreover, Article 12(c) of the Treaty, concerning the Multilateral System,

[207] FAO (2012), p. 50.
[208] *Ibidem.*
[209] G. MOORE and W. TYMOWSKI, *op. cit*., p. 42.
[210] FAO (2012), p. 51.
[211] FAO (2012), p. 52.
[212] *Ibidem.*
[213] FAO (2012), p. 53.

refers to "all available passport data and (…) any other associated available non-confidential descriptive information". This paragraph requires Contracting Parties to especially promote the collection of PGRFA that are under threat or of potential use. This doesn't mean that those PGRFA exclusively should be collected, other non-threatened or actively used PGRFA should be collected as well as this can be useful for research and breeding.[214] It's unclear whether "that are under threat or are of potential use" refers to the PGRFA that are to be collected in general or only to those PGRFA on which relevant associated information is to be collected. It does make more sense to retain the first interpretation.[215]

Pursuant Article 5.1(c) Contracting Parties have to promote or support, as appropriate, farmers and local communities' efforts to manage and conserve on-farm their PGRFA. This paragraph concerns the on-farm conservation and management of farmers' PGRFA in their fields. An important principle is recognized in this paragraph: the contribution of farmers' and local communities to the conservation of PGRFA. This is addressed more in depth while analyzing Article 9 on Farmers' Rights. Unfortunately, as was addressed in the first part of this research, there is an increase of genetic erosion and genetic uniformity because of the replacement of genetically heterogeneous traditional crop varieties with genetically more uniform modern crop varieties. As a result, there is a decline of diversity in quite a lot of traditional farmers' fields. This is why it is important that Contracting Parties take measures in order to support and promote the on-farm conservation and management of a diversity of traditional and local PGRFA in farmers' fields, home gardens, orchards and other cultivated areas of high diversity.[216] Again, the words "as appropriate" imply that the Contracting Parties have discretion in the manner in which they wish to promote and support. The support talked about in the paragraph can be financial or technical.[217]

Article 5.1(d) requires Contracting Parties to promote *in situ* conservation of CWR and wild plants for food production, including in protected areas, by supporting, *inter alia*, the efforts of indigenous and local communities. This paragraph focuses on the *in situ* conservation in the strict sense, meaning the *in situ* conservation of wild food plants and CWR, both in protected areas and on lands outside of such areas. Both wild food plants and CWR are essential for food security. The first reason is that they are very useful as sources of new traits for plant breeding.

[214] FAO (2012), p. 52.
[215] G. MOORE and W. TYMOWSKI, *op. cit*., p. 43.
[216] FAO (2012), p. 61.
[217] G. MOORE and W. TYMOWSKI, *op. cit*., p. 43

They are used as tools for the genetic improvement of the world's most important crops. Their traits have improved the productivity of crops as well as increased resistance against pests, diseases, poor growing conditions and other ecological challenges. With climate change, farmers and plant breeders will need to use their genes even more in order to find resistances against new pests or diseases and extreme weather events.[218] The second reason is that wild plant species, like roots and leafy vegetables and fruits, and CWR are part of the daily diet of many poor rural households. Moreover, they can provide an important contribution to household incomes and in times of food scarcity, when there is limited access to other forms of nutrition, they provide an important safety net.[219]The conservation of wild food plants and CWR is thus essential for food security and plant breeding. The paragraph specifically states the support of the efforts of indigenous and local communities to conserve and manage wild food plants and CWR as example on how to promote their *in situ* conservation. However, the words "*inter alia*" clearly indicate that this is only one of the many ways in which *in situ* conservation can be promoted.[220]

Pursuant Article 5.1(e) Contracting Parties shall cooperate to promote the development of an efficient and sustainable system of *ex situ* conservation, giving due attention to the need for adequate documentation, characterization, regeneration and evaluation, and promote the development and transfer of appropriate technologies for this purpose with a view to improving the sustainable use of plant genetic resources for food and agriculture. This Paragraph focuses on *ex situ* conservation. Characterization means "the systematic recording and categorization of data on plant traits that are highly heritable, easily recognizable by the eye, independent of environmental factors and thus equally expressed in all environments."[221] Evaluation means "the assessment of the agronomic characteristics of the material, generally using descriptors of quantitative traits that are affected by the environment, such as disease or drought resistance. Evaluation is carried out through measurement, observation and analysis of PGRFA."[222] Documentation is "the procedure by which information on germplasm is identified, acquired, classified, stored, handled and disseminated."[223] Regeneration refers "to the need to grow out

[218] G. MOORE and W. TYMOWSKI, *op. cit*., p. 44-45.
[219] FAO (2012), p. 59.
[220] G. MOORE and W. TYMOWSKI, *op. cit*., p. 45.
[221] FAO (2012), p. 54.
[222] *Ibidem.*
[223] *Ibidem.*

stored seeds periodically to ensure that they remain viable and to ensure that there is sufficient seed for conservation and redistribution."[224]

According to Article 5.1(f), Contracting Parties shall monitor the maintenance of the variability, degree of variation, and the genetic integrity of collections of PGRFA. This paragraph is aimed at ensuring that Contracting Parties promote the genetic diversity and integrity of collections of PGRFA.[225] It applies both to *ex situ* conservation (gene banks) and *in situ* conservation.

According to Article 5.2, Contracting Parties have the obligation to take steps, as appropriate, to eliminate or at least minimize threats to PGRFA. In the first part of the research paper we already saw the different kind of threats to the PGRFA diversity. Again, the phrase "as appropriate" implies that the Contracting Parties have a broad discretion in the measures they chose to adopt in order to implement this Article.

2.2 The Sustainable Use of PGRFA (Article 6)

Article 6 of the Treaty is devoted to another objective of the Treaty: the sustainable use of PGRFA.

2.2.1 Concepts: sustainability, sustainable agricultural development and sustainable use of PGRFA

Remarkable is the absence of any definition of sustainability, sustainable agriculture or sustainable use of PGRFA in the Treaty. Luckily, the FAO has given definitions of those terms.

FAO defines "sustainable agricultural development" (sustainable agriculture) as: "the management and conservation of the natural resource base, and the orientation of technological change in such a manner as to ensure the attainment of continued satisfaction of human needs for present and future generations. Sustainable agriculture conserves land, water, and plant and animal genetic resources, and is environmentally non-degrading, technically appropriate, economically viable and socially acceptable".[226] In a report of 2014 the FAO repeated that "natural resources should be managed in a way that maintain ecosystem functions to support

[224] G. MOORE and W. TYMOWSKI, *op. cit*., p.47.
[225] G. MOORE and W. TYMOWSKI, *op. cit*., p.48.
[226] <www.fao.org/3/ai388e/AI388E05.htm> (Accessed 3 May 2020).

current as well as future human needs".[227] The FAO also emphasized that sustainable agriculture "must minimize negative impacts on the environment while optimizing production by protecting, conserving and enhancing natural resources and using them efficiently".[228] Put simply, sustainable agriculture is agriculture which ensures the satisfaction of our current and future needs through an efficient management and conservation of natural resources, while minimizing the negative effects on the environment. Sustainable agriculture implies that PGRFA should be utilized in an efficient and sustainable manner.

The FAO defines sustainable use (sustainability) as: "the rational (or wise) use of any renewable resource in such a manner that the resource is not depleted for future use".[229] The sustainable use of PGRFA specifically is defined as "the use of genetic resources in support of sustainable agriculture, which requires a system of agriculture, that produces and facilitates access to sufficient food for all people and contributed to livelihoods and socio-economic development while protecting the environment".[230]

2.2.2 Article 6 of the Treaty

Article 6 is entirely devoted to the sustainable use of PGRFA. Article 6.1 says that the Contracting Parties shall develop and maintain appropriate policy and legal measures to promote the sustainable use of PGRFA. It's important to underlie the absence of the phrase "subject to national legislation" in this paragraph, as opposed to Article 5, meaning the obligation under Article 6 is absolute and unqualified.[231] Article 6.2 sets out a list of measures which Contracting Parties can take in order to promote the sustainable use of PGRFA. This isn't an exhaustive list, other measures can be taken as well. Because of the limited extend of this research paper, these measures won't be discussed in the current research.

2.3 National Commitments and International Cooperation (Article 7)

Article 7.1 states that each Contracting Party shall, as appropriate, integrate into its agriculture and rural development policies and programs, activities referred to in Articles 5 and 6, and

[227] FAO, *Building a common vision for sustainable food and agriculture: principles and approaches*, Rome, 2014, p. 12.
[228] *Ibidem.*
[229] FAO (2012), p. 29.
[230] *Ibidem.*
[231] G. MOORE and W. TYMOWSKI, *op. cit.*, p. 51.

cooperate with other Contracting Parties, directly or through FAO and other relevant international organizations, in the conservation and sustainable use of PGRFA. The Treaty thus imposes two obligations here. "Appropriate" gives a level of flexibility to the Contracting Parties.[232] The reason for integration and cooperation is that PGRFA involve a range of different stakeholders, such as public and private institutions, NGOs, environmental actors etc, The activities of Articles 5 and 6 can only be fully effective when there is cooperation and integration.[233]

Article 7.2 establishes some priorities of international cooperation. Article 7.2(a) says that international cooperation shall focus on establishing or strengthening the capabilities of developing countries and countries with economies in transition with respect to conservation and sustainable use of PGRFA. Article 7.2(b) says that international cooperation shall be direct to enhancing international activities to promote conservation, evaluation, documentation, genetic enhancement, plant breeding, seed multiplication and sharing, providing access to, and exchanging, in conformity with Part IV, PGRFA and appropriate information and technology. Article 7.2(c) requires the international cooperation to maintain and strengthen the institutional arrangements provided for in Part V. Part V concerns the supporting components of the Treaty. Lastly, Article 7.2(d) emphasizes that international cooperation is necessary for the implementation of the Funding Strategy of the Treaty.

2.4 Technical Assistance (Article 8)

Article 8 states that Contracting Parties have to promote the provision of technical assistance to Contracting Parties, especially developing countries or countries with economies in transition, either bilaterally or through appropriate international organizations, with the objective of facilitating the implementation of the Treaty. Technical assistance has as general goal to increase incomes and outputs in the developing countries. Therefore, technical assistance mainly aims at capacity development through the transfer of know-how, skills, technology etc. However, it can also have other objectives, such as the monitoring and facilitation of resource flows.[234] This Article, and Article 7.2(a), recognizes that developing

[232] G. MOORE and W. TYMOWSKI, *op. cit*., p.61.
[233] *Ibidem.*
[234] G. MOORE and W. TYMOWSKI, *op. cit*., p.65.

states sometimes don't have the economic or technical capacity to implement the Treaty in the way they would want to.[235]

Chapter 3. Farmers' Rights (Article 9)

Article 9, concerning the Farmers' Rights, is one of the most important articles of the Treaty. First, it is important to discuss the rationale behind the Farmers' Rights (3.1). Then we will address how the Farmers' Rights have to be implemented (3.2). Lastly, we look at the right of farmers to save, use, exchange and sell (3.3).

3.1 The rationale of Farmers' Rights

To recall, the concept of Farmers' Rights was introduced for the first time in the IU as an Agreed Interpretation under Resolution 4/89 and was further defined in Resolution 5/89 (*cfr. Supra Part 1, 3.1.2*). The reason therefore is that farmers had a feeling of inequality because the IU recognized and rewarded the contributions of plant breeders and researchers to the development of PGRFA through Plant Breeders' rights, patents etc., but didn't acknowledge the enormous contributions of the farmers. In Resolution 5/89 Farmers' Rights are defined as being vested in the International Community, which differentiates them from the rights of individual farmers to compensation for individual innovations.[236] The need to provide for the realization of Farmers' Rights was one of the main factors that led to the IU being review, which led to the negotiations of the Treaty.

In Article 9.1 the Contracting Parties recognize the enormous contribution of local and indigenous communities and farmers of all regions of the world, particularly those in the centres of origin and crop diversity, in the conservation and development of PGRFA which constitute the basis of food and agriculture production throughout the world. The Preamble clearly states that the farmers' contributions serve as the basis for Farmers' Rights.[237] It is the first time in history that an international legally binding instrument has recognized farmers' contributions.[238]

[235] G. MOORE and W. TYMOWSKI, *op. cit*., p.66.
[236] G. MOORE and W. TYMOWSKI, *op. cit*., p. 67.
[237] Preamble of the Treaty, paragraph 7.
[238] FAO, *Farmers' Rights*, Fourth Educational Module in the Educational Modules on the International Treaty Series, Rome, 2017, p. 45. Hereafter: FAO (2017).

Since the beginning of agriculture, farmers have been both custodians and innovators of agricultural biodiversity.[239] With their knowledge, traditional practices and skills, farmers and indigenous communities have made, and continue to make, enormous contributions in the conservation, improvement and sustainable use of PGRFA that feed the world. For centuries farmers all over the world have domesticated plants and developed new crop varieties through the careful selection, saving and exchanging of their best seeds and traditional knowledge. They have bred and grown crops that are adapted to new environmental changes and needs. Though their continuous management and innovations, farmers have developed a broad PGRFA diversity of global importance for food and agriculture.[240] Farmers' varieties provide the diversity of PGRFA that lie at the basis of breeding as they are used to develop new plant varieties.

Farmer Rights' are important in order to ensure that farmers are encouraged and supported in continuing to play their vital role for food security as custodians and innovators of PGRFA.[241]

3.2 The implementation of Farmers' Rights

During the negotiations of the Treaty, there were a lot of discussions about what the content of the Farmers' Rights should be.[242] Article 9.2 says that the realization of Farmers' Rights relating to PGRFA is the responsibility of national governments and says that Contracting Parties should take measures to protect and promote Farmers' Rights in accordance with their needs and priorities and subject to national legislation. Governments aren't obliged to take such measures, but are encouraged to ("should").[243] The Paragraph then continues by listing three measures that Contracting Parties can take to protect and promote Farmers' Rights. This is only an indicative list, it doesn't exclude other measures to promote or protect Farmers' Rights.[244] It is up to each Contracting Party to define the scope of Farmers' Rights under its jurisdiction.

The first one is the protection of traditional knowledge relevant to PGRFA (Article 9.2(a)). It is up to the Contracting Parties if and how they want to protect traditional knowledge relevant to PGRFA.[245] For instance, through a sui generis system, through IPRs etc.

[239] FAO (2017), p. 5.
[240] *Ibidem.*
[241] FAO (2017), p. 6.
[242] G. MOORE and W. TYMOWSKI, *op. cit*., p. 68.
[243] G. MOORE and W. TYMOWSKI, *op. cit*., p. 72.
[244] *Ibidem.*
[245] *Ibidem.*

The second is the right to equitably participate in sharing benefits arising from the utilization of PGRFA (Article 9.2(b)). Under the Multilateral System of the Treaty Contracting Parties agree that the benefits arising from the use of the PGRFA under the Multilateral System shall flow primarily to farmers who conserve and sustainably use PGRFA (Article 13.3). How these benefits are to be shared is determined by the Governing Body of the Treaty. However, national governments will also have a word to say in the distribution of the benefits arising under the Multilateral System in their own countries.[246]

The third one is the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA (Article 9.2(c)). This is important because by participating, they can address their needs and priorities. Again, national governments can choose the extent of such right.[247]

3.3 The right of farmers to save, use, exchange and sell farm-saved seeds

Article 9.3 states that nothing in Article 9 shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate. The right of farmers to save, use, exchange and sell seed is controversial. Some find that farmers shall not be subject to any restriction regarding the use and disposition of seeds, including those protected under IPRs. However, others say that this would decrease the incentive to commercial breeding and would even lead to food insecurity. Article 9.3 is neutral, it doesn't exclude the possibility of national laws recognizing farmers' rights in relation to saving, using and exchanging seeds/propagating material, but it also doesn't prevent national laws from limiting or excluding such rights when the seeds/propagating material are protected by IPRs.[248]

Chapter 4. The Multilateral System of Access and Benefit-sharing (Articles 10-13)

Article 10 of the Treaty consists of two paragraphs. The first paragraph states that Contracting Parties recognize the sovereign rights of the other Contracting States over their own PGRFA and that the access to those resources is to be determined by the national governments and is

[246] G. MOORE and W. TYMOWSKI, *op. cit*., p. 73.
[247] *Ibidem.*
[248] G. MOORE and W. TYMOWSKI, *op. cit*., p. 76.

subject to national legislation. This paragraph recognizes the principle of sovereign rights of states over their PGRFA, including the access to them. The second paragraph states that Contracting Parties, within the exercise of their sovereign rights, agree to establish a Multilateral System. This Multilateral System must be efficient, effective and transparent and has two purposes which are complementary and mutually reinforcing. Firstly, it has to facilitate access to PGRFA. Secondly, it has to share, in a fair and equitable way, the benefits arising from the utilization of these resources.

The Multilateral System of Access and Benefit-sharing (MLS) is the core mechanism of the Treaty. It creates a virtual pool of the PGRFA that are most important for food security and on which countries are most interdependent and makes them available at no or minimal cost for research, breeding or training purposes to all Contracting Parties. By creating this mechanism the Treaty ensures a continued flow of those PGRFA.[249] The Governing Body established the *Ad Hoc* Technical Advisory Committee on the Multilateral System and the Standard Material Transfer Agreement through Resolution 4/2009 as an advisory and technical mechanism to help users of the MLS in the implementation of this latter.[250]

First, it is necessary to comprehend the coverage of the MLS (4.1). Then, the first purpose of the MLS, the facilitated access, is analysed (4.2). After that, the second purpose of the MLS, the benefit-sharing, is looked upon (4.3).

4.1 Coverage of the Multilateral System (Article 11)

Article 11 establishes the scope of the MLS. It determines which PGRFA are covered by the Multilateral System. It consists of five paragraphs.

4.1.1 Limited coverage of the Multilateral System

While the scope of the Treaty in general comprehends all PGRFA[251], the scope of application of the MLS is restricted in Article 11.1 and Article 11.2.

Article 11.1 states that the MLS only covers the PGRFA listed in Annex I of the Treaty and that this Annex was established according to the criteria of food security and interdependence.

[249] G. MOORE and W. TYMOWSKI, *op. cit*., p.1
[250] Governing Body, Resolution 4/2009, The Multilateral System of Access and Benefit-sharing, Third Session of the Governing Body of the ITPGRFA, Tunis, Tunisia, 1-6 June 2009.
[251] Article 3 of the Treaty: "this treaty relates to plant genetic resources for food and agriculture".

Concretely, this means that the list in Annex I contains the PGRFA which are the most important for food security and on which countries are most interdependent.[252] These criteria also need to be considered when interpreting the list and when considering future additions to the list.[253] It is the Contracting Parties together with groups of experts who determined which crops and forage species belonged on the list, based on the criteria of food security and interdependence. In the first part of the research food security was defined and it was emphasized that there is both a quantitative and qualitative aspect (*cf. supra Chapter 1, Section 1*). Considering the quantitative aspect and in light of the criteria of food security, Annex I consists of the major crops (rice, potatoes, maize, wheat, beans etc.), but also of minor crops which are staple crops for many local populations (for instance, taro and coconut). Moreover, considering the quantitative aspect of the definition, Annex I should include many fruits and nuts.[254] As for right now, Annex I contains 64 crops. While drafting Annex I, there were quite a lot of difficulties in defining each crop and some ambiguities still remain. [255]

The reason behind the restricted coverage is that Contracting Parties first wanted to experience how benefits flow under the MLS before committing to a wider coverage. Further additions and exclusions to Annex I can be realized by consensus by the Governing Body. This will depend on the experience of the Contracting Parties regarding the current MLS.[256]

Article 11.2 states that the PGRFA under Annex I shall only be covered by the MLS if they are under the management and control of the Contracting Parties and in the public domain. In other words, Contracting Parties only have obligations under the MLS for the Annex I PGRFA which are under their management and control and in the public domain. The Committee has defined these terms."Under the management" means that "the Contracting Party has the power to undertake acts of conservation and utilization in relation to the material".[257] In other words, the Contracting Party has the power to decide how the material is managed. "Under control" refers to "the legal power to dispose of the material".[258] PGRFA in the public domain are PGRFA

[252] These PGRFA will furtherly be referred to as "Annex I PGRFA".
[253] G. MOORE and W. TYMOWSKI, *op. cit*., p.81.
[254] *Ibidem.*
[255] For instance, wheat is defined as "Triticum et al.", the meaning of "et al." left unclear; G. MOORE and W. TYMOWSKI, *op. cit*., p. 82.
[256] G. MOORE and W. TYMOWSKI, *op. cit*., p.81.
[257] FAO, *Opinions and advice of the Ad Hoc Technical Advisory Committee on the Multilateral System of Access and Benefit-sharing*, Rome, 2015, p. 18.
[258] *Ibidem.*

which aren't protected by intellectual property rights (IPRs).[259] These PGRFA automatically fall under the scope of the MLS, meaning they are part of the MLS without any declaration or notification.[260] The reason for this restriction is that Contracting Parties felt like committing to obligations concerning PGRFA belonging to private persons within their jurisdiction would deprive these persons of their property rights over these PGRFA.[261]

4.1.2 Voluntary inclusions to the Multilateral System

The limitation of the scope of the MLS provided for by Article 11.2 is softened by three provisions. These provisions ensure that PGRFA listed in Annex I, but which don't fall under the management and control of the Contracting Parties and in the public domain, can still voluntarily be included in the MLS by the holders of these PGRFA. These holders are natural and legal persons under the jurisdiction of the Contracting States which have property rights over Annex I PGRFA.[262] For instance, public entities owning gene banks which aren't under the governments' control, provincial governments[263], private collectors of PGRFA, universities and independent research institutions.[264]

Firstly, Article 11.2 *in fine* requires that the Contracting Parties invite all these non-public natural and legal holders of Annex I PGRFA to include their resources in the MLS as well. Of course, this is voluntary and thus these holders aren't obliged to act upon this invitation. Their consent is needed in order to include their PGRFA in the MLS. According to the Article, the ratio is to achieve the fullest possible coverage of the MLS.

Secondly, Article 11.3 states that the Contracting Parties shall take appropriate measures in order to encourage these non-public holders to include their PGRFA in the MLS.

Thirdly, Article 11.4 requires that within the two years of the entry into force of the Treaty the Governing Body assesses the progress in including those non-publicly held PGRFA in the Multilateral System. Following this assessment, the Governing Body shall decide whether

[259] FAO, *Opinions and advice of the Ad Hoc Technical Advisory Committee on the Multilateral System of Access and Benefit-sharing*, *op. cit*., p. 19.
[260] *Ibidem.*
[261] G. MOORE and W. TYMOWSKI, *op. cit*., p. 83.
[262] ITPGRFA, Article 11.3.
[263] In countries with a federal system some gene banks are under regional or provincial control. Such collections don't automatically fall within the MLS. The consent of the regional or provincial institutions is needed under Article 11.3.
[264] G. MOORE and W. TYMOWSKI, *op. cit*., p. 83-84.

access shall continue to be facilitated to those natural and legal persons under the jurisdiction of the Contracting Parties that have not included their Annex I PGRFA in the MLS, or take other appropriate measures. In other words, non-public holders of Annex I PGRFA who have not included those resources in the MLS will perhaps be excluded from the MLS's benefits. This provision is supposed to encourage the holders of non-publicly held Annex I PGRFA to voluntarily include their PGRFA in the MLS.[265]

Article 11.5 states that the MLS also includes Annex I PGRFA held in *ex situ* collections of the International Agricultural Research Centers (IARC) of the Consultative Group on International Agricultural Research (CGIAR), as provided in Article 15.1(a), and in other international institutions that sign agreements with the Governing Body, in accordance with Article 15.5. It is important to note that the criteria of Article 11.2 don't apply here as this would not make any sense because the materials held by IARCS are not under the management or control of a Contracting Party.[266] Chapter 5.2 of the present research gives more information on the *ex situ* collections of IARCs.

4.2 Facilitated Access to PGRFA within the Multilateral System (Article 12)

One of the two goals of the MLS is to facilitate access to PGRFA of crops included in the Multilateral System (Annex I PGRFA). Article 12 outlines the modalities for this facilitated access.

4.2.1 Beneficiaries of facilitated access under the Multilateral System

Article 12.1 states that by ratifying the Treaty the Contracting Parties agree that the facilitated access to the Annex I PGRFA shall be in accordance with the provisions of the Treaty.

Article 12.2 identifies the beneficiaries of the facilitated access under the MLS. It states that "Contracting Parties agree to take the necessary legal or other appropriate measures to provide such access to other Contracting Parties through the Multilateral System. To this effect, such access shall also be provided to legal and natural persons under the jurisdiction of any Contracting Party, subject to Article 11.4". In other words, a Contracting Party is obliged to provide facilitated access to PGRFA in the MLS when another Contracting Party or a legal or natural person under the jurisdiction of a Contracting Party requests so. However, pursuant to

[265] G. MOORE and W. TYMOWSKI, *op. cit*., p. 84.
[266] G. MOORE and W. TYMOWSKI, *op. cit*., p. 85.

Article 11.4, the facilitated access for legal and natural persons is subject to a review by the Governing Body of the process in including non-publicly held PGRFA in the MLS. Although not specified in this Article, facilitated access shall also be provided to a IARC or other international institution that has signed an agreement with the Governing Body under Article 15.[267]

It is important to note that this provision, or any provision in the Treaty for that matter, doesn't prevent Contracting Parties from granting access to Annex I PGRFA to Non-Contracting Parties.[268] It is up to the choice of each Contracting Party how they wish to treat Non-Contracting Parties.[269] Neither does it prevent Contracting Parties from granting access to PGRFA which are not listed in Annex I to Contracting or Non-Contracting Parties. Moreover, if pursuant to Article 11.4 the Governing Body choses to discontinue facilitated access to private or legal persons, Contracting Parties could still choose to provide access to them anyways.[270] However, in all of these cases there would need to be a separate agreement as the access would be provided outside of the framework of the MLS under the Treaty and all obligations, conditions and benefits under the MLS don't apply.[271] This is quite obvious because the MLS only covers Annex I PGRFA and only applies to Contracting Parties or persons under their jurisdiction. However, the Contracting Parties, in this separate agreement, could chose to give access to the genetic material according to the same terms and conditions as under the MLS.[272]

From the wordings "other Contracting Parties" and "any Contracting Party" it is clear that international transfers, for instance the request of someone in one Contracting Party to have access to genetic material in another Contracting Party, are covered by the MLS and thus access has to be facilitated.[273] What about domestic transfers? For instance, the request of someone in one Contracting Party to have access to genetic material in a gene bank in that same Contracting Party. From the wording "any Contracting Party" it's quite clear that also domestic transfers are covered by the MLS because *any* also includes the legal and natural persons under the jurisdiction of the Contracting Party providing the access. If the Treaty would have wanted to

[267] ITPGRFA, Article 15.2.
[268] FAO, *Opinions and advice of the Ad Hoc Technical Advisory Committee on the Multilateral System of Access and Benefit-sharing*, *op. cit.*, p. 35.
[269] G. MOORE and W. TYMOWSKI, *op. cit.*, p. 177.
[270] G. MOORE and W. TYMOWSKI, *op. cit.*, p. 88.
[271] Ibidem.
[272] G. MOORE and W. TYMOWSKI, *op. cit.*, p. 89.
[273] G. MOORE and W. TYMOWSKI, *op. cit.*, p. 88.

exclude domestic transfers, it would've used the words *any other* Contracting Party.[274] Moreover, if domestic transfers were to be excluded from the coverage of the MLS, then the whole MLS would be voided of its purpose. The reason therefore is that if recipients of PGRFA were able to demand access to Annex I PGRFA from their own national gene banks outside of the framework of the Treaty, then they could export those materials to others free of all obligations under the MLS.[275]

4.2.2 Conditions of facilitated access

Articles 12.3(a) through (h) sets out the conditions under which facilitated access shall be provided under the MLS.

The first condition is that the access to the material under the MLS (Annex I PGRFA) shall only be provided "for the purpose of utilization and conservation for research, breeding and training for food and agriculture (…) " (article 12.3(a)). The purpose of the use of the Annex I PGRFA is thus determinant for the application of the MLS.[276] The paragraph continues by stating that "such purpose does not include chemical, pharmaceutical and/or other non-food/feed industrial uses". However, holders of Annex I PGRFA can still provide access for such purposes in a separate agreement, outside of the framework of the MLS.[277] The last sentence of the paragraph says that "in the case of multiple-use crops (food and non-food), their importance for food security should be the determinant for their inclusion in the MLS and availability for facilitated access". It is up to the Contracting Party providing the Annex I PGRFA and the Contracting Party or natural or legal person requesting to be the judge of this.[278]

The second condition is that the access "shall be accorded expeditiously, without the need to track individual accessions and free of charge, or, when a fee is charged, it shall not exceed the minimal cost involved" (article 12.3(b)). There are three elements in this paragraph. Firstly, the access shall be accorded expeditiously, meaning efficiently and quickly. Secondly, there is no need to track individual accessions. The reason therefore is that the Contracting Parties decided upon the use of material transfer agreements (*cf. infra 4.2.3*). This means that transfers are automatically formally recorded and that the holders of PGRFA aren't required to track the

[274] *Ibidem.*
[275] *Ibidem.*
[276] G. MOORE and W. TYMOWSKI, *op. cit*., p. 89.
[277] G. MOORE and W. TYMOWSKI, *op. cit*., p. 90.
[278] *Ibidem.*

transfers of the material assessed.[279] Thirdly, the access shall be accorded free of charge. However, administrative fees can be charged, but cannot exceed the costs involved.

The third condition is that, in addition to the PGRFA, access shall also be given to all available passport data and, subject to applicable law, any other associated available non-confidential descriptive information (article 12.3(c)).

The fourth condition is that "the recipients of the PGRFA shall not claim any intellectual property or other rights that limit the facilitated access to the PGRFA, or their genetic parts or components, in the form received from the Multilateral System" (article 12.3(d)). The aim of this paragraph is quite clearly to prevent that the facilitated access of PGRFA under the MLS would be made impossible because of recipients getting IPRs or other rights over the material.[280]
IPRs give the holder of the right exclusive use over the material. He can choose to permit others to use the material, but he isn't obliged to do so. The most common types of IPRs are patents, Plant Breeders' Rights and trade secrets (undisclosed information). "Other rights" could for instance be the ownership over the received PGRFA.[281] IPRs are a very sensitive subject, making this provision one of the most controversial issues during the negotiations because the developed and developing countries had very different views. This resulted in a clause with several ambiguities, open to different interpretations.

A first ambiguity concerns the wordings "intellectual property or other rights that limit the facilitated access to the PGRFA". Some commentators say that the words "limit facilitated access" only applies to "other rights" and thus interpret this paragraph as meaning that recipients cannot claim any kind of IPRs over the material in the form received from the MLS.[282] Another interpretation, which makes more sense, is to consider that "limit facilitated access" qualifies both the intellectual property and other rights. The paragraph should then be considered as meaning that IPRs or other rights cannot be claimed over the material, or subsequent products derived from that material, only if this would limit the facilitated access by others to the original material accessed.[283] But even then a difficulty still persists in

[279] G. MOORE and W. TYMOWSKI, *op. cit*., p. 91.
[280] X, *Intellectual Property and Development: Overview of Developments in Multilateral, Plurilateral and Bilateral Fora,* South Centre and CIEL IP Quarterly Update: Third Quarter 2004, 2004, p. 5.
[281] G. MOORE and W. TYMOWSKI, *op. cit*., p. 92.
[282] *Ibidem.*
[283] G. MOORE and W. TYMOWSKI, *op. cit*., p. 92.

determining which IPRs limit facilitated access. Facilitated access is not defined in the Treaty. However, Article 12.3(a) says that the purpose of facilitated access is research, breeding and training for food and agriculture. Article 12.3(d) can thus be interpreted as only prohibiting IPRs which limit facilitated access for research, breeding and training purposes. According to some, this would mean that IPRs including a research or experimentation exemption over the material are allowed over material received under the MLS as they don't limit facilitated access for these purposes.[284] Others say that this wasn't the intention of the drafters of the Treaty.

A second ambiguity relates to the words "genetic parts or components, in the form received from the Multilateral System". During the negotiations, developing countries wanted to add the phrase "or their genetic parts or components" and wanted to delete "in the form received". Developed countries wanted the opposite. Article 12.3(d) thus reflects a compromise, if we can call it that, between both.[285] The Treaty has not defined "genetic parts or components", however, it seems to mean "genes or any parts thereof" present in the accessed PGRFA.[286] It is clear that a recipient cannot get IPRs that prevent others from having facilitated access, through the MLS, to PGRFA as received by the MLS, without any kind of modification. Such material would not be protected by IPR anyways because the criteria of novelty for IPR wouldn't be satisfied.[287] IPRs over products derived from the PGRFA are also not allowed if limits facilitated access to the original material, or its genes or any parts thereof, in the form received.[288] However, the central question is: what is "in the form received"? How much improvement or modification is required for a PGRFA to no longer be in the form of the material received?[289] For instance, is the extraction of one gene from the material you received under the MLS a sufficient alteration of the material received such that the isolated gene is no longer in "in the form received" and that IPRs over that isolated gene are allowed? Or, is the addition of one new gene the material received sufficient to differentiate it as a new product from the material received and no longer "in the form of the material received"?[290] For developed countries the answer to these questions is positive. The Article's prohibition on IPRs

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[284] *Ibidem*.
[285] L. R. HELFER, *Intellectual property rights in plant varieties: International legal regime and policy options for national governments*, FAO legislative study No. 85, FAO, Rome, 2004, p. 89.
[286] G. MOORE and W. TYMOWSKI, *op. cit*., p. 93.
[287] X, *Intellectual Property and Development: Overview of Developments in Multilateral, Plurilateral and Bilateral Fora, op. cit.,* p. 5
[288] G. MOORE and W. TYMOWSKI, *op. cit*., p. 93.
[289] X, *Intellectual Property and Development: Overview of Developments in Multilateral, Plurilateral and Bilateral Fora, op. cit.,* p. 5
[290] G. MOORE and W. TYMOWSKI, *op. cit*., p. 93.

doesn't extend to genes or parts of genes if that is not the form in which the material was received. Developed countries thus tend to interpret "in the form received" as meaning that IPRs are allowed over the material received or products derived from the material received if an improvement or modification has been made. Because then it is no longer "in the form received from the Multilateral System" and the criteria of novelty of IPR is met. Many developed countries have declared upon their ratification that they interpret "Article 12.3(d) of the Treaty as recognizing that plant genetic resources for food and agriculture or their genetic parts or components which have gone innovation may be the subject of intellectual property rights provided that the criteria relating to such rights are met".[291] Developing countries have a different view. They insisted upon the inclusion of the words "genetic parts or components" in the provision because they didn't want there to be IPRs on isolated or purified genes or DNA sequences, without any kind of modification, as allowed in some jurisdictions.[292] They are of the opinion that even if a gene has been added to the material received, the material received is still embedded in the product and thus it is still "in the form received", meaning IPRs are not allowed. The same goes for isolated genes or parts thereof, they are still "in the form received", even if they have been removed from their surrounding material.[293]

The fifth condition is that whether or not access shall be given to PGRFA under development, including material being develop by farmers, shall be at the discretion of its developer, during the period of its development (article 12.3(e)).

The sixth condition is that access to PGRFA protected by intellectual and other property rights shall be consistent with relevant international agreements and with relevant national laws (article 12.3(f)). Since PGRFA in the public domain and under the management and control of the Contracting Parties are automatically included in the MLS, this paragraph refers to the PGRFA put voluntarily in the MLS by their holders.[294] Firstly, this paragraph recognizes that IPRs over those PGRFA can exist and ensures that these IPRs aren't extinguished when included in the MLS.[295] The holders of IPRs have the exclusive use over the material protected and have different rights over this material. For instance, they can choose to allow others to use it and eventually charge them for this. However, isn't this then in contrary to Article 12.3(b)

[291] <www.fao.org/fileadmin/user_upload/legal/docs/033s-e.pdf>(accessed 1 July 2020).
[292] X, *Intellectual Property and Development: Overview of Developments in Multilateral, Plurilateral and Bilateral Fora, op. cit.,* p. 6.
[293] *Ibidem*.
[294] G. MOORE and W. TYMOWSKI, *op. cit*., p. 94.
[295] *Ibidem.*

which requires free access to the material under the MLS?[296] Secondly, this paragraph says that access to PGRFA protected by IPRs shall be consistent with relevant international and national legislation. IPRs are protected only in the countries where they have been registered. The effects of IPRs can thus differ in the different countries depending on the national intellectual property laws of each country.[297] These national laws have to be conform to the international agreements, such as the WTO TRIPS Agreement, for the countries Parties to those agreements.

The seventh condition is that when a recipient has accessed PGRFA under the MLS and has conserved them, then the recipient shall continue to make these PGRFA available to the MLS (article 12.3(g)). This paragraph doesn't create an obligation on recipients to conserve material received. For example, a gene bank can get rid of material that is no longer useful. It does however create the obligation for recipients who do conserve the material to make it available to the MLS.[298] The aim of this paragraph is that material doesn't disappear from the System once it has been accessed. However, it isn't very clear if only the original material accessed has to continue to be made available or also products derived from the original material (which are potentially protected by IPRs).[299]

The eight, and last, condition is that, without prejudice to the other provisions under this Article, Contracting Parties shall also provide facilitated access to PGRFA in the MLS which are found in *in situ* conditions, in accordance with national legislation or, in the absence of such legislation, in accordance with standards set by the Governing Body (article 12.3(h)). To recall, PGRFA in the MLS are in the public domain and under the management and control of the Contracting Parties, unless voluntarily included by their holders under Article 11.2. This means that material found in *in situ* conditions, other than those in national parks or other state land, are not in the MLS, unless voluntarily included by their holders.[300] According to this paragraph it is the responsibility of Contracting Parties to establish the modalities of access to materials in *in situ* conditions. "Without prejudice to the other provisions under this Articles" implies that the national legislation cannot impose new requirements or conditions which are incompatible with Article 12.[301] In absence of national legislation, access to PGRFA in *in situ* conditions has to be given in accordance with standards set by the Governing Body. One example of such

[296] G. MOORE and W. TYMOWSKI, *op. cit*., p. 95.
[297] *Ibidem.*
[298] G. MOORE and W. TYMOWSKI, *op. cit*., p. 96.
[299] *Ibidem.*
[300] G. MOORE and W. TYMOWSKI, *op. cit*., p. 97.
[301] G. MOORE and W. TYMOWSKI, *op. cit*., p. 96.

standards is the International Code of Conduct for Plant Germplasm Collecting and Transfer adopted by the FAO Conference in 1993.[302]

4.2.3 Standard Material Transfer Agreement

Article 12.4 establishes that the facilitated access under the MLS "shall be provided pursuant to a standard material transfer agreement which shall be adopted by the Governing Body (…)". When Parties want to provide or receive material under the MLS they have to do this through a material transfer agreement (MTA). A MTA is a private agreement between one or more particular providers and recipients containing the terms and conditions on which the material under the MLS shall be transferred.[303] The MTAs have to use the standard material transfer agreement (SMTA), adopted by the Governing Body in its Resolution 1/2006 of 16 June 2006, as template.[304] The SMTA is a mandatory model contract for parties wishing to provide and receive material under the MLS. It can't be modified or abbreviated, however, there are a lot of blank spaces that need to be completed at every use. The SMTA is meant to simplify the negotiation process and reduce the transactions costs of MTAs and shorten the overall order-to-delivery time.[305]

Article 12.4 continues by saying that this SMTA shall contain the provisions of Articles 12.3(a) (access shall be provided solely for the purpose of utilization and conservation for research, breeding and training for food and agriculture), (d) (ban of IPRs over material in the form received) and (g) (material accessed shall continue to be made available to the Multilateral System) as well as the benefit-sharing provisions set forth in Article 13.2d(ii) and other relevant provisions of the Treaty. It also has to contain the provision that the recipient of PGRFA shall require that the conditions of the MTA shall apply to the transfer of PGRFA to another person or entity, as well as to any subsequent transfers of those PGRFA. All of these provisions have to be explicitly written down in the SMTA, not merely be taken into account or implicitly incorporated.[306]

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[302] FAO Conference, *International Code of Conduct for Plant Germplasm Collecting and Transfer*, November 1993.
[303] G. MOORE and W. TYMOWSKI, *op. cit*., p. 99.
[304] Governing Body, Resolution 2/2006, *The Standard Material Transfer Agreement*, First Session of the Governing Body of the ITPGRFA, Madrid, Spain, 12-16 June 2006.
[305] FAO, *Standard Material Transfer Agreement*, 2009, p. 1.
[306] G. MOORE and W. TYMOWSKI, *op. cit*., p. 98.

It is obvious from the wordings of the Article that all transfers of PGRFA under the MLS (Annex I PGRFA) between Contracting Parties or entities within the jurisdiction of Contracting Parties must happen pursuant the SMTA. As addressed previously, the transfer of Annex I PGRFA to Non-Contracting Parties is nowhere forbidden. Such transfers are done outside of the framework of the MLS and the use of the SMTA is thus not obligated.[307]

Article 12.5 asks Contracting Parties to provide for an opportunity to seek recourse under their legal systems, consistent with applicable jurisdictional requirements, in case of contractual disputes arising under such MTAs, recognizing that obligations arising under such MTAs rest exclusively with the parties to those MTAs. Thus, according to this Article, Contracting Parties have to provide in a mechanism under their legal system for addressing any disputes concerning MTAs. There are a couple of remarks to be made.

This paragraph recognizes that the obligations arising under a MTA exclusively rest with the parties to that MTA, being the recipient and the provider.[308] The provider of the material can enforce the MTA against the recipient of the material and *vice versa* because they are bound by this contract. However, what if the recipient transfers the material to another person or entity (subsequent recipient) which don't fulfill their obligations? The original provider doesn't have a contractual relationship with the subsequent recipients and thus cannot enforce the MTA. The original provider depends on the original recipient to take action to enforce the legal obligation of the subsequent recipients as only he has a contractual lien with them.[309]

This paragraph doesn't specify which law should be applicable or which judicial jurisdiction should be competent to resolve the disputes arising under MTAs. This, however, has been specified in the SMTA. Article 7 of the SMTA establishes the applicable law: General Principles of Laws (including UNIDROIT Principles of International Commercial Contracts 2004), the objectives and the relevant provisions of the Treaty, and, when necessary for interpretation, the decisions of the Governing Body. Article 8.4 of the STMA establishes a cascade of dispute resolution mechanisms. First, parties have to try to resolve the dispute amicably though negotiation. If that doesn't work, the parties can mutually agree to meditation, through a neutral third party mediator. If the dispute hasn't been settled through negotiation or

[307] G. MOORE and W. TYMOWSKI, *op. cit*., p. 100.
[308] The Governing Body is the third party beneficiary under the MTA; Standard Material Transfer Agreement (SMTA), Article 4.3.
[309] G. MOORE and W. TYMOWSKI, *op. cit*., p. 100.

mediation, any party can submit the dispute for arbitration under the Arbitration Rules of an international body agreed upon by the parties. In absence of such agreement, the dispute shall be settled under the Arbitration Rules of the International Chamber of Commerce. The decision of this Chamber is binding. During the meeting of the Expert Group on the terms of the SMTA, it was affirmed that having international arbitration as the mode of dispute resolution under the SMTA isn't contrary to the wording of Article 12.5. During that meeting international arbitration was even encouraged because it has multiple advantages. It allows for a more consistent interpretation of the obligations under the SMTA and the Treaty and prevents a lot of divergent decisions from various national courts.[310]

Dispute settlement can be initiated by the provider, the recipient or the Governing Body as third party beneficiary.[311]

4.2.4 Emergency disaster situations

Article 12.6 states that in emergency disaster situations the Contracting Parties have to provide facilitated access to PGRFA in the MLS which are needed to restore agricultural systems, in cooperation with disaster relief co-ordinators.

4.3 Benefit-sharing in the Multilateral System (Article 13)

As stated in Article 10.2, the MLS has two purposes which are complementary and mutually reinforcing. The first one was to facilitate access to PGRFA under the MLS. The second one is to share, in a fair and equitable way, the benefits arising from the utilization of these resources. Article 13 of the Treaty contains the provisions of benefit-sharing in the MLS. Article 13.1 recognizes that the facilitated access to PGRFA in the MLS in itself constitutes a major benefit of the MLS. It is actually the primary benefit of the MLS.[312] Indeed, as was addressed in the first part of the research, Contracting Parties need access to PGRFA in order to improve their crops and ensure food security. In Article 13.1 Contracting Parties also agree that the benefits arising from all uses of the PGRFA under the MLS must be shared fairly and equitably in accordance with the mechanisms set out in Article 13.2. The sharing of benefits under the MLS is crucial for the success of the Treaty.

[310] G. MOORE and W. TYMOWSKI, *op. cit.*, p. 101.
[311] SMTA, Articles 8.1 and 8.2.
[312] C. FRISON, *op. cit.*, p. 193.

4.3.1 Mechanisms for benefit-sharing

Article 13.2 lists four mechanisms through which the benefits arising from the use, including commercial use, of PGRFA under the MLS shall be shared fairly and equitably. The benefits take two forms: non-monetary (information sharing, access to technology, capacity-building) and monetary (monetary benefits from commercialization).[313] The Article also says that the priority activity areas in the rolling Global Plan of Action (*cf. infra* 5.1) should be taken into account when considering the fair and equitable sharing of benefits and that the whole process of benefit-sharing will happen under the guidance of the Governing Body.

A. Exchange of information

The first mechanism listed by Article 13.2 is the exchange of information, which is absolutely primordial as knowledge is the most powerful tool. Article 13.2(a) requires the Contracting Parties to make available information about the PGRFA under the MLS to all Contracting Parties through the information system provided for in Article 17. The paragraph gives a non-exhaustive list of what this information shall encompass: catalogues and inventories, information on technologies, results of technical, scientific and socio-economic research and characterization, evaluation and utilization data.[314] This is information is useful for the use of those PGRFA to improve crops.[315] The paragraph continues by stating that the information shall be made available, where non-confidential, subject to applicable law and in accordance with national capabilities. This implies that only non-confidential information is to be made available and subject to applicable law, which includes intellectual property law. Moreover, the reference to national capabilities implies that the extent to which Contracting Parties shall comply with the obligation to provide information depends on their national capabilities. Some Contracting Parties may have small information collections or insufficient personnel and funds to provide information and thus it shall not be expected from them to meet standards beyond their capacities.[316]

B. Access to and transfer of technology

[313] D. SCHAFFRIN, B. GÖRLACH and C. GERSTETTER, *op. cit*., p. 69; C. FRISON, *op. cit*., p. 193.
[314] These types of information were discussed under Article 5.2(e).
[315] G. MOORE and W. TYMOWSKI, *op. cit*., p. 104.
[316] G. MOORE and W. TYMOWSKI, *op. cit*., p. 105.

The second mechanism listed by Article 13.2, dealt specifically with in Article 13.2(b), is the access to and transfer of technology. We can divide technologies into two broad categories: soft and hard technologies. Soft technologies include knowledge of methods, skills, conservation techniques, practices etc. Hard technologies include tangible goods such as equipment, infrastructure, hardware, seeds etc.[317] It is important to emphasize that the access to, and transfer of, technologies under this Article is not limited to modern technologies, but also includes traditional technologies, such as knowledge, traditional techniques etc.[318]

Article 13.2(b)(i) requires Contracting Parties to provide and/or facilitate access to technologies for the conservation, characterization, evaluation and use of PGRFA which are under the MLS. The provision of, and facilitated access to, technologies is thus limited to these purposes. From the wordings of this subparagraph, it is not clear whether Contracting Parties have to provide access to technologies or directly provide the technologies themselves. From the title of Article 13.2(b), the first interpretation seems to be the right one.[319] Under this subparagraph, Contracting Parties thus have the obligation to provide access to technologies or at least facilitate such access. This last option is mostly conceivable for technologies subject to private property.[320] The second sentence of Article 13.2(b)(i) recognizes that some technologies can only be transferred through genetic material. This implies that certain technologies are incorporated into genetic resources.[321] In that case, Contracting Parties are required to provide and/or facilitate access to such technologies through providing or facilitating access to the relevant genetic materials under the MLS, including genetic material and improved varieties developed through the use of PGRFA under the MLS, in conformity with Article 12.[322] The third sentence states that access to these technologies, improved varieties and genetic material shall be provided and/or facilitated while respecting applicable property rights and access laws, and in accordance with national capabilities. Again, this means that it shall not be expected from Contracting Parties to meet standards beyond their capacities. For instance, it cannot be expected from a poor country to spend millions on researching traditional conservation techniques.[323]

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[317] *Ibidem.*
[318] G. MOORE and W. TYMOWSKI, *op. cit*., p. 106.
[319] *Ibidem.*
[320] *Ibidem.*
[321] G. MOORE and W. TYMOWSKI, *op. cit*., p. 107.
[322] ITPGRFA, Article 13.2(b)(i).
[323] G. MOORE and W. TYMOWSKI, *op. cit*., p. 107.

Article 13.2(b)(ii) lists various measures through which access to, and transfer of, technology is to be carried out, especially to developing countries and countries with economies in transition. Such measures include the establishment and maintenance of, and participation in, crop-based thematic groups on the utilization of PGRFA, partnerships in research and development and in commercial joint ventures relating to the material received, human resource development and, last but not least, effective access to research facilities. All of these things are considered as important "vehicles for the technology transfers" because they offer a platform where technology can be exchanged.[324] Article 16 of the Treaty even recognizes crop-based thematic groups as an essential supporting component to the Treaty (*cf. infra* 5.3).

Article 13.2(b)(iii) states that access to and transfer of technology as referred to in (i) and (ii), including that protected by IPRs, to developing countries that are Contracting Parties and countries with economies in transition, shall be provided and/or facilitated under fair and most favourable terms. In particular in the case of technologies for use in conservation as well as technologies for the benefit of farmers in developing countries, especially in least developed countries and countries with economies in transition. "Fair and favourable terms" means the "terms that are equitable and which are the best terms offer to other countries".[325] The subparagraph also states that the fair and favourable terms includes "concessional and preferential terms" where mutually agreed, *inter alia*, through partnerships in research and development under the MLS. "Concessional and preferential terms" means "terms that are more favourable than those normally offered on the market".[326] Finally, the subparagraph states that access and transfer to these technologies shall respect the adequate and effective protection of IPRs.

C. Capacity-building

The third mechanism listed by Article 13.2 is capacity-building, which is specifically addressed in Article 13.2(c). Capacity-building is essential for countries to be able to conserve and sustainably use their PGRFA and properly use transferred technologies.

Article 13.2(c) requires Contracting Parties to give priority to three capacity-building areas, taking into account the needs of developing countries and countries with economies in

[324] *Ibidem*.
[325] G. MOORE and W. TYMOWSKI, *op. cit*., p. 108.
[326] *Ibidem*.

transition, as expressed through the priority they accord to building capacity in PGRFA in their plans and programs, when in place, in respect of the PGRFA covered by the MLS. This makes sense because it is difficult to provide support to a country which doesn't even recognize capacity-building as a priority.[327] The three capacity-building areas are: (i) the establishment or strengthening of programs for scientific and technical education and training in conservation and sustainable use of PGRFA, (ii), the development and strengthening of facilities for conservation and sustainable use of PGRFA, particularly in developing countries and countries with economies in transition, iii) the carrying out of scientific research, particularly in developing countries and countries with economies in transition, in cooperation with institutions of such countries, and developing capacity for such research in fields where they are needed.

D. Sharing of benefits arising from commercialization

The fourth mechanism listed by Article 13.2 is the sharing of monetary and other benefits arising from commercialization. This is specifically dealt with in Article 13.2(d).

Pursuant Article 13.2(d)(i) the Contracting Parties agree, under the MLS, to take measures in order to achieve commercial benefit-sharing, through the involvement of the private and public sectors in activities identified under this Article, through partnerships and collaboration, including with the private in developing countries and countries with economies in transition, in research and technology development.

Under Article 13.2(d)(ii) the Contracting Parties agree that the SMTA shall include a requirement that the recipient of material under the MLS who commercializes a product that is a PGRFA and that incorporates the material accessed under the MLS, is obliged to pay an equitable share of the benefits arising from the commercialization of that product to the mechanism established under Article 19.3(f), which is the Benefit-sharing Fund (*cfr. infra* 6.2). This is an important Article as it establishes a mandatory monetary benefit-sharing scheme.[328] Pursuant this subparagraph, the SMTA states that a recipient that commercializes a product that is a PGRFA and that incorporates material from the MLS, shall pay a fixed percentage of the

[327] G. MOORE and W. TYMOWSKI, *op. cit*., p. 108.
[328] G. MOORE and W. TYMOWSKI, *op. cit*., p. 110.

sales of the commercialized product into the mechanisms established by the Governing Body for this purpose, in accordance with Annex II of the SMTA.[329]

The commercialization is what activates the obligation of payment. The SMTA defines "to commercialize" as "to sell a product or products for monetary consideration on the open market" and states that "commercialization" has a corresponding meaning. Commercialization "shall not include any form of transfer of plant genetic resources for food and agriculture under development".[330] Thus, the obligation to pay arises when the recipient sells the product. A "product" is defined in the SMTA as PGRFA "that incorporate the material or any of its genetic parts or components that are ready for commercialization, excluding commodities and other products used for food, feed and processing".[331] There is thus no obligation to pay for the selling of normal commercial products, such as breakfast cereal containing wheat, or commodities.[332]

Both Article 13.2(d)(ii) of the Treaty and Article 6.7 of the SMTA emphasize that this obligation to pay does not apply when such a product is "available without restriction to others for further research and breeding". In those cases, the recipient who commercializes isn't obliged to make a payment, but shall be encouraged to make such payment. Article 2 of the SMTA states that "a product is considered to be available without restriction to others for further research and breeding when it is available for research and breeding without any legal or contractual obligations, or technologic restrictions, that would preclude using it in the manner specified in the Treaty". In other words, the monetary benefit-sharing only applies if the further availability of the commercialized product or components of the product for research and breeding is restricted by the recipient, for instance through IPRs or other legal, contractual or technologic restrictions.[333]

Article 13.2(d)(ii) further requires the Governing Body, at its first meeting, to determine the level, form and manner of the payment, in line with commercial practice. Annex II of the SMTA sets the level, form and manner of payment to be made under the SMTA. The recipient, or its affiliates, contractors, licensees, and lessees, shall pay 1.1 % of the sales of the product(s) minus 30%. The 30% is a lump sum that includes the administrative costs, taxes, shipping costs etc.[334]

[329] SMTA, Article 6.7.
[330] SMTA, Article 2.
[331] *Ibidem.*
[332] G. MOORE and W. TYMOWSKI, *op. cit.*, p. 110.
[333] G. MOORE and W. TYMOWSKI, *op. cit.*, p. 111.
[334] C. FRISON, *op. cit.*, p. 196.

In setting this level of payment, the Contracting Parties, through the Governing Body, have directly decided what is fair and equitable.[335]

Article 13.2(d)(ii) states that the Governing Body may, from time to time, review the levels of payment with a view to achieving fair and equitable sharing of benefits. It may also assess, within a period of five years from the entry into force of the Treaty, whether the mandatory payment requirement in the SMTA shall also apply in cases where such commercialized products are available without restriction to others for further research and breeding.

4.3.2 Link between benefit-sharing and the Funding Strategy

Article 13.3 establishes how the benefits arising from the use of the PGRFA under the MLS are to be used. The benefits arising from the use of PGRFA that are shared under the MLS should flow primarily, directly and indirectly, to farmers in all countries, especially in developing countries and countries with economies in transition, who conserve and sustainably utilize PGRFA. Again, we can see here that the contributions of farmers are recognized and rewarded. This incentives farmers to continue exchanging seed, sharing knowledge etc. The wording of this paragraph gives priority to developing countries and countries with economies in transition, however, it doesn't exclude benefit sharing with farmers who conserve and sustainably use PGRFA in developed countries.[336]

Article 13.4 says that the Governing Body shall, at its first meeting, consider relevant policy and criteria for specific assistance under the agreed funding strategy established under Article 18 for the conservation of PGRFA in developing countries and countries with economies in transition whose contribution to the diversity of PGRFA in the MLS is significant and/or which have special needs. The Governing Body has said that the priorities will be the priority activity areas of the rolling Global Plan of Action for the Conservation and Sustainable Utilization of PGRFA.[337] This Article links the Funding Strategy with benefit-sharing.

Article 13.5 recognizes that the ability to full implement the Global Plan of Action, in particular of developing countries and countries with economies in transition, will depend largely upon

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[335] G. MOORE and W. TYMOWSKI, *op. cit*., p. 103.
[336] G. MOORE and W. TYMOWSKI, *op. cit*., p. 112.
[337] Appendix F to Treaty Secretary, *Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture*, First Session of the Governing Body of the ITPGRFA, Doc. IT/GB-1/06/Report, Madrid, Spain, 12-16 June 2006, paragraph 3 and 4.

the effective implementation of this Article and of the funding strategy as provided in Article 18. This Article links benefit-sharing and the Funding Strategy established pursuant Article 18.[338]

Article 13.6 states that Contracting Parties shall consider modalities of a strategy of voluntary benefit-sharing contributions whereby Food Processing Industries that benefit from PGRFA shall contribute to the MLS. This Article acknowledges the food industry as potential financial contributors to the MLS, based on the fact that the food industry benefits a lot from PGRFA.[339] This Article is strongly linked to Article 18.4(f) of the Treaty, which welcomes voluntary contributions from all sources. A strategy to incentive the food industry to make contributions to the MLS could include the creation of a "green tag" for products coming from the contributing industries and raising awareness to consumers about the fact that these food industries contribute to the conservation and sustainable use of PGRFA.[340]

Chapter 5. Supporting Components

Part V of the Treaty is dedicated to supporting components, which are mechanisms that support the Treaty, but also exist independently of the Treaty.[341] They are very helpful for Contracting Parties in the implementation of the Treaty.

5.1 Global Plan of Action (Article 14)

Article 14 recognizes that the rolling Global Plan of Action for the Conservation and Sustainable Use of PGRFA is important to this Treaty and states that Contracting Parties should promote its effective implementation, including through national actions and, as appropriate, international cooperation to provide a coherent framework, inter alia, for capacity-building, technology transfer and exchange of information, taking into account the provisions of Article 13.

At the time of the adoption of the Treaty in 2001, the existing Global Plan of Action was the one adopted in 1996 by the Fourth International Technical Conference on Plant Genetic

[338] G. MOORE and W. TYMOWSKI, *op. cit*., p. 112.
[339] C. FRISON, *op. cit*., p. 330.
[340] *Ibidem.*
[341] G. MOORE and W. TYMOWSKI, *op. cit*., p. 151.

Resources.[342] However, Article 14 uses the expression "rolling Global Plan of Action", implying that the legislator expected that the initial Global Plan of Action of 1996 would be updated over time. It has indeed been updated by the Second Global Plan of Action for PGRFA adopted by the FAO Council in 2011 (GPA).[343] This updated GPA considers the new developments that have occurred in agriculture, the deteriorating effects of climate change, scientific and technology innovations, policy developments etc.[344]

The GPA is an important supporting component of the Treaty, which is also recognized in the Preamble of the Treaty.[345] It is also affirmed in the GPA itself: "the adoption of the Second Plan of Action (…) plays an important role in the international policy framework for world food security, as a supporting component of the International Treaty on PGRFA (…)".[346] One of the GPA's main aims is to "strengthen the implementation of the International Treaty".[347] The GPA wants to "ensure the conservation of PGRFA as a basis for food security, sustainable agriculture (…)" as well as "assist countries, regions, the Governing Body of the International Treaty and other institutions responsible for conserving and using PGRFA to identify priorities for action".[348] The GPA provides a non-binding scientific and technical framework which help Contracting Parties to implement the Treaty's provisions regarding conservation and sustainable use of PGRFA.[349] It translates the broadly formulated provisions of the Treaty into concrete and elaborate policy recommendations, strategies, programs and activities.[350] As such, it helps Contracting Parties to achieve their obligations of conservation and sustainable use under the Treaty. The Treaty's provisions on conservation and sustainable use draw heavily on the GPA.[351] The Second GPA has 18 priority activities divided under four broad groups: *in situ* conservation and management, *ex situ* conservation, sustainable use and building sustainable institutional and human capacities. Each provision of the Treaty concerning conservation and sustainable use of PGRFA corresponds with one or more of the priority activities of the GPA.[352]

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[342] International Technical Conference on Plant Genetic Resources, *the Global Plan of Action for the Conservation and Sustainable utilization of Plant Genetic Resources for Food and Agriculture*, Fourth International Technical Conference on Plant Genetic Resources, Leipzig, Germany, 13 June 1996.
[343] FAO Council, *Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture*, FAO, Rome, Italy, 29 November 2011. Hereafter: Second GPA.
[344] FAO (2012), p. 94.
[345] Preamble of the Treaty, paragraph 5.
[346] Second GPA, p. 3.
[347] Second GPA, p. 18.
[348] Second GPA, p. 18.
[349] G. MOORE and W. TYMOWSKI, *op. cit*., p. 117.
[350] FAO (2012), p. 85.
[351] FAO (2012), p. 93.
[352] FAO (2012), p. 95.

5.2 *Ex situ* collections of PGRFA held by the IARCs of the CGIAR and other International Institutions (Article 15)

The Consultative Group on International Agricultural Research (CGIAR) is the world's largest global partnership that unites organizations engaged in research for a food-secure future. The CGIAR has three goals: reduce poverty, improve food and nutrition security and improve natural resources and ecosystems services. CGIAR's research is carried out by International Agricultural Research Centres (IARCs), which are independent, non-profit research organizations that are member of the CGIAR. The CGIAR currently has 15 IARCS, which are mostly situated in developing countries.[353]

Article 15.1 of the Treaty calls upon the IARCs to sign agreements with the Governing Body with regard to their *ex situ* collections held "in trust". At the time of the drafting of the Treaty and this Article, 12 IARCs of the CGIAR had signed agreements with the FAO, placing their *ex situ* collections of PGRFA within the International Network of *Ex Situ* Collections under the auspices of the FAO.[354] The collections had as legal status that they were held in trust by the IARCs for the benefit of the international community.[355] This is why Article 15.1 refers to "in trust". The Article calls upon the IARCs to sign agreements with the Governing Body in order to bring these *ex situ* collections of PGRFA in the framework of the Treaty. On 16 October 2006 the IARCs signed agreements with the Governing Body, which bring all their *ex situ* collections of PGRFA within the MLS of the Treaty.[356] These new agreements replace the former agreements with the FAO. The need for separate agreements is due to the fact that, although IARCs have their own legal personality, they aren't states and therefore cannot become parties to the Treaty. Consequently, the Treaty cannot govern the *ex situ* collections held by the IARCs directly. That's why the Treaty opted for a mechanism of agreements between the Governing Body and the IARCs in order to be able to include their collections within the MLS of the Treaty.[357]

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[353] All of this information can be found on the website of the CGIAR: <www.cgiar.org> (accessed 12 July 2020).
[354] FAO (2010), p. 151; Treaty Secretary, *Information document on activities related to the supporting components of the Treaty, Second Session of the Governing Body of the ITPGRFA*, Doc. IT/GB-2/07/Inf.7, Rome, Italy, 29 October - 2 November 2007, paragraph 16.
[355] G. MOORE and W. TYMOWSKI, *op. cit*., p. 120.
[356] Treaty Secretary, *Information document on activities related to the supporting components of the Treaty, op. cit.,* paragraph 18; FAO (2010), p. 151; C. FRISON, *op. cit*., p. 140. Example of such an agreement: < www.fao.org/3/a-bb893e.pdf>.
[357] G. MOORE and W. TYMOWSKI, *op. cit*., p. 148.

Besides the call for agreements, Article 15.1 recognizes the importance of the *ex situ* collections of IARCs and for the Treaty. The IARCs hold some of the largest *ex situ* collections of PGRFA in gene banks. Collectively, the IARCs maintain over 770.000 accessions from thousands of different species.[358] The IARCs' gene banks contain a large diversity and are well maintained and documented. The collections are extensively used, each year the IARC's provide hundreds of thousands of free and improved duplicate accessions to national programs and gene banks.[359] Most accessions distributed are from landraces, followed by wild species.[360] The inclusion of the materials held in *ex situ* collections of IARCs and other relevant international institutions into the MLS is crucial for the success of the Treaty. The reason therefore is that, by making their collections available under the MLS, they facilitate the access of agricultural researchers and breeders in all 146 Contracting Parties to that material. As such, they highly contribute to the development of a sustainable system of *ex situ* conservation and to the conservation of crop diversity. A very significant part of the PGRFA contained in the MLS come from the IARCs.[361]

The subparagraphs of Article 15.1 establish the terms and conditions according to which the *ex situ* collections of PGRFA held by the IARCs shall be made available. Concretely, they indicate which materials of the IARCs fall within the MLS of the Treaty.

Article 15.1(a) concerns PGRFA listed in Annex I held by IARCs. Pursuant to this Article, IARCs shall make available their Annex I PGRFA in accordance with the provisions set out in Part IV of the Treaty. In other words, the access and benefit-sharing of Annex I PGRFA held by IARCs shall be in accordance with Articles 12 and 13 of the Treaty. Concretely, this means that those materials are to be made available in the same way as those held by the Contracting Parties, meaning through the SMTA.[362]

Article 15.1(b) concerns non-Annex I PGRFA held by IARCs which have been collected before the entry into force of the Treaty. In contrary to the Annex I PGRFA of the IARCs, which have to be made available in accordance with Articles 12 and 13 of the Treaty, these non-Annex I PGRFA had to be made available in accordance with the provisions of the MTA that was in use at the time of the entry into force of the Treaty pursuant to the 1994 agreements between the

[358]FAO (2010), p. 60; www.cgiar.org.
[359] G. MOORE and W. TYMOWSKI, *op. cit*., p. 119.
[360] FAO (2010), p. 95.
[361] FAO (2012), p. 91.
[362] Treaty Secretary, *Information document on activities related to the supporting components of the Treaty, op. cit.,* paragraph 18.

IARCs and the FAO, until the Governing Body modified this MTA.[363] The paragraph requires the Governing Body to amend this MTA no later than its second regular session, in consultation with the IARCs, in accordance with the relevant provisions of the Treaty, especially Articles 12 and 13, and under some conditions established in the subparagraphs of Article 15.1(b). The Governing Body has amended the MTA at its Second Session.[364] This is the MTA to be utilized by IARCs when making available non-Annex I PGRFA in the MLS. It is important to emphasize that these subparagraphs only apply to non-Annex I PGRFA of IARCs collected before the entry into force of the Treaty.

Article 15.1(b)(i) states that IARCs shall periodically inform the Governing Body about the MTAs entered into. Article 15.1(b)(ii) says that Contracting Parties in whose territory the PGRFA were collected from *in situ* conditions shall be provided with samples of such PGRFA on demand, without any MTA. In other words, Contracting Parties that supplied non-Annex I PGRFA to the IARCs can ask for samples of these PGRFA without having to enter in a MTA. Article 15.1(b)(iii) establishes the way in which benefits arising under the MTA accompanying non-Annex I PGRFA of IARCs are to be used. It says that the benefits arising under this MTA shall be applied, in particular, to the conservation and sustainable use of the PGRFA in question, particularly in national and regional programs in developing countries and countries with economies in transition, especially in centres of diversity and the least developed countries. The benefits arising under the MTA accompanying non-Annex I PGRFA thus fall outside the MLS. This provision is very similar to Article 13.3 of the Treaty, which establishes the way in which benefits arising from the use of Annex I PGRFA under the MLS are to be used.[365] Last but not least, Article 15.1(b)(iv) poses on IARCs the obligation to maintain effective compliance with the conditions of the MTAs, in accordance with their capacity, and to inform the Governing Body of cases of non-compliance.

Article 15.1 contains some more subparagraphs, which don't require much commentary. According to Article 15.1(c), the IARCs recognize the authority of the Governing Body to provide policy guidance relating to their *ex situ* collections subject to the provisions of the Treaty. Article 15.1(d) states that the scientific and technical facilities in which the *ex situ*

[363] ITPGRFA, Article 15.1(b).
[364] Treaty Secretary, *Report of the Governing Body of the of the International Treaty on Plant Genetic Resources for Food and Agriculture*, Doc. IT/GB-2/07/Report, Rome, Italy, 29 October - 2 November 2007, paragraph 66-68.
[365] G. MOORE and W. TYMOWSKI, *op. cit*., p. 123.

collections are conserved shall remain under the authority of the IARCs. The IARCs shall manage and administer these collections in accordance with internationally accepted standards, in particular the FAO Genebank Standards. Article 15.1(e) enables the Secretary to provide appropriate technical support upon request by an IARC. Article 15.1(f) recognizes the right of the Secretary to, at any time, have access to the facilities and to inspect all activities performed therein directly related to the conservation and exchange of the material covered by Article 15. Lastly, Article 15.1(g) requires the Secretary to, with the approval of the host country, assist in the evacuation or transfer of *ex situ* collections held by the IARCs whose orderly maintenance is impeded or threatened by whatever event, including force majeure.

Article 15.2 requires Contracting Parties to provide facilitated access to Annex I PGRFA under the MLS to the IARCs that have signed agreements with the Governing Body in accordance with Article 15.1. If IARCs make their material available to the MLS, it is only normal that they get access to the MLS in return.

Article 15.3 applies to non-Annex I PGRFA received and conserved by IARCs after the coming into force of the Treaty. These materials shall be available for access on terms consistent with those mutually agreed between the IARCs that receive the material and the country of origin of such resources or the country that has acquired those resources in accordance with the CBD or other applicable law. This Article implies that the Treaty's provisions regarding facilitated access and benefit-sharing do not apply to non-Annex I PGRFA collected by an IARC after the coming into force of the Treaty.[366]

Article 15.4 requires Contracting Parties to provide IARCs that have signed agreements with the Governing Body with access, on mutually agreed terms, to non-Annex I PGRFA that are important to the programs and activities of the IARCs. This Article implicitly acknowledges the importance of research concerning non-Annex I PGRFA by IARCs.[367] Such provision does not exist for the Contracting Parties.

Pursuant Article 15.5 the Governing Body has to seek to establish agreements for the purposes stated in Article 15 with other relevant international institutions. The broad wording of this Article enables any institution with PGRFA collections to place its collections within the MLS, including non-Annex I PGRFA acquired prior to the coming into force of the Treaty and Annex

[366] G. MOORE and W. TYMOWSKI, *op. cit*., p. 121.
[367] G. MOORE and W. TYMOWSKI, *op. cit*., p. 125.

I PGRFA.[368] Thus far, the Governing Body has signed agreements with the Tropical Agricultural Research and Higher Education Centre, the International Coconut Genebank for Africa and the Indian Ocean, the International Coconut Genebank for the South Pacific, the International Cocoa Genebank, the Mutant Germplasm Division of the FAO and the Centre for Pacific Crops and Trees (Secretariat of the Pacific Community).[369]

5.3 International Plant Genetic Resources Networks (Article 16)

Networks bring together many people of many countries, such as holders of PGRFA, breeders, farmers, experts, researchers, private or public institutions, governmental institutions etc. involved in the conservation, utilization, development and management of PGRFA.[370] According to the Second GPA "networks not only facilitate the exchange of PGRFA, but also provide a platform for scientific discussion, information sharing, technology transfer and research collaboration".[371] Networks help to identify and share responsibilities regarding the collection, conservation, distribution, evaluation, genetic improvement, documentation etc. They also are helpful to set priorities, develop policies and provide means to various organizations and institutions.[372] Networks on PGRFA thus highly contribute in the success and implementation of the Treaty. The second GPA identifies three types of networks.[373] There are crop-specific networks, which are focused on one or more specific crops, such as the Coconut Genetic Resources Network, the Asian Network for Sweet Potato Genetic Resources etc. There are also regional networks, such as the North American Network on Plant Genetic Resources, European Cooperative Programme for Crop Genetic Resources Networks, the West Asia and North Africa Plant Genetic Resources Network etc. Lastly, there are thematic reports, which address specific themes. An example is the African Farming Systems Research Network.

In light of the importance of such networks, Article 16.1 of the Treaty requires Contracting Parties to encourage existing cooperation in international PGRFA networks or develop such cooperation on the basis of existing arrangements, so as to achieve as complete coverage as possible of PGRFA. Article 16.2 requires the Contracting Parties to encourage all relevant

[368] *Ibidem.*
[369] C. FRISON, *op. cit.,* 183.
[370] G. MOORE and W. TYMOWSKI, *op. cit*., p. 129.
[371] Second GPA, p. 72.
[372] *Ibidem.*
[373] *Ibidem;* G. MOORE and W. TYMOWSKI, *op. cit*., p. 129-130.

institutions, including governmental, private, non-governmental, research, breeding and other institutions to participate in the international networks.

5.4 The Global Information System on PGRFA (Article 17)

Article 17.1 of the Treaty requires Contracting Parties to cooperate to develop and strengthen a Global Information System (GLIS)[374], based on existing information systems, to facilitate the exchange of information on scientific, technical and environmental matters related to PGRFA, with the expectation that such exchange of information will contribute to the sharing of benefits by making information on PGRFA available to all Contracting Parties.

Article 13.2(a), the exchange of information mechanism under the MLS, already referred to the GLIS regarding the inclusion of particular information of the PGRFA under the MLS. However, Article 17.1 refers to "information on scientific, technical and environmental matters related to PGRFA". The scope of the GLIS is thus not limited to the PGRFA under the MLS, it applies to all PGRFA as defined under the Treaty.[375] The GLIS provides "an ideal tool for enabling the exchange of information on all dimensions and types of knowledge associated with PGRFA, from conservation to product development".[376]

The Article says that the GLIS must be based on existing information systems. This is probably to avoid "adding another layer of information that could compete with, or duplicate, existing ones". At its Sixth Session in 2015 the Governing Body adopted the Vision and first Programme of Work on the GLIS.[377] The Vision states that the GLIS "integrates and augments existing systems to create the global entry point to information and knowledge for strengthening the capacity for PGRFA conservation, management and utilization."[378] Accordingly, the GLIS has developed partnerships and connections with quite a few information systems, such as the

[374] <https://ssl.fao.org/glis/> (accessed 9 July 2020).
[375] C. KER, S. LOUAFI and M. SANOU, *Building a Global Information System in Support of the International Treaty on Plant genetic Resources*, in M. HALEWOOD, I. N. LOPEZ and S. LOUAFI (Eds.), *Crop genetic resources as a global commons: challenges in international law and governance* (283-309), Routledge, London, 2012, p. 285.
[376] C. KER, S. LOUAFI and M. SANOU, *op. cit.,* p. 286.
[377] Governing Body, Resolution 3/2015, *The Vision and the Programme of Work on the Global Information System*, Fifth Session of the Governing Body of the ITPGRFA, IT/GB-6/15/Res 3, Fifth Session of the Governing Body of the ITPGRFA, Muscat, Oman, 24-28 September 2013.
[378] Annex I to Resolution 3/2015.

World Information and Early Warning System (WIEWS)[379], Genesys[380], GRIN-Global and the European Search Catalogue for Plant Genetic Resources.[381]

Article 1.1 says that in developing the GLIS, cooperation has to be sought with the Clearing House Mechanism of the CBD. The Clearing House Mechanism, established in Article 18 of the CBD, which has as aim to ensure that all CBD Contracting Parties have access to the information on biodiversity they need in order to promote and facilitate scientific and technical cooperation, the exchange of information and to establish an human and technological network.[382] In the 2020-21 *biennum* the Secretary of the Treaty seeks to strengthen the linkages with the Mechanism.[383]

According to Article 17.2, the GLIS also has to provide for an early warning, based on the notification by Contracting Parties, about hazards that threaten the efficient maintenance of PGRFA, with a view to safeguard the material. This is important because, as was addressed during the first part of the research, there are many threats to biodiversity, such as the displacement of farmers' varieties by modern varieties, habitat destruction, climate change etc. WIEWS contains an Early Warning System on Genetic Erosion.

Article 17.3 states that Contracting Parties shall cooperate with the CGRFA in its periodic reassessment of the state of the world's PGRFA in order to facilitate the updating of the rolling GPA referred to in Article 14. Currently, two reports on the state of the world's PGRFA have been published. The first one was published in 1996[384] and the second one in 2010[385]. A third one is currently in the process of making and should be published this year. The reports are mainly based on national reports of the Contracting Parties, which is why their cooperation is primordial.

[379] WIEWS, established by FAO, is a global information system on PGRFA which facilitates information exchange;< www.fao.org/wiews/background/en/> (accessed 10 July 2020).
[380] Genesys is the most comprehensive information system, containing information on about one third of the world's gene bank accessions.
[381] <www.fao.org/plant-treaty/areas-of-work/global-information-system/en/> (accessed 10 July 2020).
[382] G. MOORE and W. TYMOWSKI, *op. cit*., p. 129; <www.cbd.int/chm/> (accessed 15 August 2020).
[383] <www.fao.org/plant-treaty/areas-of-work/global-information-system/en/>(accessed 10 July 2020).
[384] FAO, *First Report on The State of the World's Plant Genetic Resources for Food and Agriculture*, Rome, 1996.
[385] FAO, *The Second Report on State of the World's Plant Genetic Resources for Food and Agriculture*, Rome, 2010.

Chapter 6. Financial Provisions (Article 18)

A treaty cannot be implemented without financial resources. First, we are going to look at the Funding Strategy under the Treaty (6.2). Secondly, we are going to address the Benefit-sharing Fund of the Treaty (6.2).

6.1 Funding Strategy

Article 18.1 requires Contracting Parties to implement a funding strategy for the implementation of the Treaty in accordance with the provisions of this Article. Pursuant Article 19, it is the Governing Body that has to adopt the funding strategy. At the First Session of the Governing Body, through Resolution 1/2006, the Funding Strategy was adopted.[386] However, it has recently been updated.[387]

According to Article 18.2, the objectives of the Funding Strategy are to enhance the availability, transparency, efficiency and effectiveness of the provision of financial resources to implement activities under the Treaty. The Funding Strategy is an agreed strategy whose aim is "the development of ways and means by which adequate resources are available for the implementation of the Treaty, and the transparent, efficient and effective utilization of all resources made available under the Funding Strategy" and "to ensure that sufficient financial resources are mobilized through a range of channels for the implementation of the Treaty in a long-term, coordinated and effective way".[388] It enables "the Governing Body, Contracting Parties, funding agencies, farmers and other relevant actors to secure funding and other resources for the programmatic implementation of the Treaty".[389]

The Funding Strategy doesn't impose on parties the obligation to provide new funds, the Strategy mobilizes funds from existing resources outside of the Treaty or resources provided for in the Treaty (mandatory and voluntary payments under Article 13.2(d)(ii), voluntary contributions under Article 13.6 and 18.4(f)).[390]

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[386] Governing Body, Resolution 1/2006, *The Funding Strategy*, First Session of the Governing Body of the ITPGRFA, Madrid, Spain, 12-16 June 2006.
[387] Governing Body, Resolution 3/2019, *Implementation of the Updated Funding Strategy of the International Treaty 2020-2025*, Eight Session of the Governing Body of the ITPGRFA, Rome, Italy, 11-16 November 1019. Hereafter: Resolution 3/2019
[388] FAO, "The Funding Strategy of the International Treaty", Third Educational Module in the Educational Modules on the International Treaty Series, Rome, January 2014, p. 36. Hereafter: FAO (2014).
[389] Annex I to Resolution 3/2019, paragraph 6.
[390] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 139.

Article 18.3 states that in order to mobilize funding for priority activities, plans and programs, in particular in developing countries and countries with economies in transition, and taking the Global Plan of Action into account, the Governing Body shall periodically establish a target for such funding. The target under the new Funding Strategy is 0,9 to 1.1 billion USD $ per year over a period of 10 years with a milestone of 40% to be achieved by 2026 to support the implementation of the Treaty.[391]

Article 18.4 consists of six paragraphs. Article 18.4(a) poses on the Contracting Parties the obligation to take the necessary and appropriate measures within the Governing Bodies of relevant international mechanisms, funds and bodies to ensure due priority and attention to the effective allocation of predictable and agreed resources for the implementation of plans and programs under this Treaty. Under this Article Contracting Parties are required to ensure that funding for the Treaty is not overlooked by relevant international mechanisms, but they are not expected to actually ensure the effective allocation of the resources.[392] Such "relevant international mechanisms, funds and bodies" include the Global Environment Facility (GEF), the Global Crop Diversity Trust, CGIAR, the World Bank etc.[393] "Predictable and agreed" means that the resources should be agreed upon by the recipient country and the mechanism and that they should be a made available in a way that enables the recipient to make plans for the disbursement and delivery.[394]

Article 18.4(b) says that the extent to which Contracting Parties that are developing countries or countries with economies in transition will effectively implement their commitments under the Treaty, depends on the effective allocation, particularly by the developed Parties, of the resources referred to in this Article. In counterpart, Contracting Parties that are developing countries or countries with economies in transition will accord due priority in their own plans and programs to building capacity in PGRFA.

Article 18.4(c) says that Contracting Parties that are developed countries provide, and Contracting Parties that are developing countries or countries with economies in transition avail themselves of, financial resources for the implementation of the Treaty through bilateral and

[391] Resolution 3/2019, paragraph 3.
[392] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 140.
[393] *Ibidem.*
[394] *Ibidem.*

regional and multilateral channels. Such channels shall include the mechanism referred to in Article 19(f), *i.e.*, the Benefit-sharing Fund (*cfr. Infra 6.2*).

Article 18.4(d) says that each Contracting Party agrees to undertake, and provide financial resources for, national activities for the conservation and sustainable use of PGRFA in accordance with its national capabilities and financial resources. In other words, Contracting Parties have to undertake national conservation and sustainable use activities and finance those. These activities are those listed in Articles 5, 6 and 7 of the Treaty.[395] As has already been said before, it shall not be expected from a Contracting Party to go beyond its capabilities and resources. The Article also says that the financial resources provided shall not be used to ends inconsistent with the Treaty, in particular in areas related to international trade in commodities.

Article 18.4(e) says that the Contracting Parties agree that the financial benefits arising from Article 13.2(d) are part of the Funding Strategy. Although the paragraph refers to the whole Article 13.2(d), the wordings "financial benefits" indicate that the paragraph refers to the payments to be made under Article 13.2(d)(ii).[396]

Article 18.4(f) opens the possibility of voluntary contributions provided by Contracting Parties, the private sector, taking into account Article 13, NGOs and other sources. The Contracting Parties agree that the Governing Body shall consider modalities of a strategy to promote such contributions. The voluntary contributions include: voluntary contributions under Article 13.2(d), when the product is available without restriction to others for further research and breeding, voluntary contributions from the food industry (Article 13.6) and all other voluntary contributions.

Article 18.5 says that the Contracting Parties agree that priority will be given to the implementation of agreed plans and programs for farmers in developing countries, especially in least developed countries, and in countries with economies in transition, who conserve and sustainably use PGRFA. This Article is consistent with Article 13.3, which also prioritizes farmers in developing countries our countries with economies in transition who conserve and sustainably use PGRFA, and actually the whole Treaty. "agreed plans and programs" implies

[395] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 141.
[396] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 142.

that the plans and programs have to be agreed upon by the recipient country or farmer, and the providing country.[397]

6.2 Benefit-sharing Fund of the Funding Strategy

Under Article 19.3(f) the Governing Body has to establish an appropriate mechanism, such as a Trust Account, for receiving and utilizing financial resources that will accrue for purposes of implementing this Treaty. The Governing Body at its First Session has established the Benefit-sharing Fund (BSF) through Resolution 1/2006 and a Trust Account in order to receive and utilize financial contributions to the Benefit-sharing Fund.[398]

The BSF is an important component of the Funding Strategy. The BSF receives the resources mobilized under the Funding Strategy. It comprises the resources that are under direct control of the Governing Body, meaning "the resources over which the Governing Body has the power to decide what they should be used for".[399] This includes voluntary contributions from any source to implement the Funding Strategy (so voluntary payments under Article 13.2(d)(ii), voluntary contributions under Article 13.6 and 18.4(f), or any other voluntary contributions) and all mandatory and voluntary contributions pursuant to Article 13.2 of the Treaty.[400]

Chapter 7. Institutional Provisions

Part VII of the Treaty contains the institutional provisions of the Treaty. First, it is fitting to address the functioning of the Treaty's two administrative bodies, the Governing Body and the Secretary (7.1). Secondly, the provisions dealing with compliance (7.2) and the settlement of disputes (7.3) will be analyzed. Thirdly, an overview of the Treaty's final clauses will be given (7.4).

7.1 Administrative bodies of the Treaty

The Treaty establishes two administrative bodies: the Governing Body (Article 19) and the Secretary (Article 20). They are responsible for the institutional functioning of the Treaty.

7.1.1 The Governing Body (Article 19)

[397] *Ibidem.*
[398] Governing Body, Resolution 1/2006, *The Funding Strategy*, First Session of the Governing Body of the ITPGRFA, Madrid, Spain, 12-16 June 2006, paragraph 14. Hereafter: Resolution 1/2006.
[399] FAO (2014), p. 14.
[400] FAO (2014), p. 15.

Article 19.1 establishes the Governing Body of the Treaty, which is composed of representatives of all Contracting Parties. The Governing Body is the Treaty's highest organ.

First, let's take a look at Article 19.7, which requires the Governing Body to adopt its own Rules of Procedure and financial rules, which shall not be inconsistent with the Treaty. The Governing Body adopted both its Rules of Procedure and Financial Rules at its First Session in Madrid in 2006.[401] Rule 1.1 of the Financial Rules states that the Financial Rules shall govern the financial administration of the Treaty. Rule 1 of the Rules of Procedure defines the scope of the Rules of Procedure: the rules shall apply to all sessions of the Governing Body and the activities of its Secretary as well as, *mutatis mutandis*, to subsidiary bodies unless the Governing Body decides otherwise in accordance with Rule 9.2. As we will see, the Rules of Procedures build on the provisions of Article 19 and, where needed, add more specific rules that allow the Governing Body to function effectively.[402]

A. Consensus and one-vote policy

Pursuant Article 19.2 all decisions of the Governing Body have to be taken by consensus, unless it is decided by consensus that a matter can be decided upon by another method of decision-making, for instance majority vote. However, Articles 23 (amendments to the Treaty) and 24 (Annexes to the Treaty) always require consensus. Consensus implies that each Contracting Party has a veto power. Rule 6 of the Rules of Procedure is a copy-paste of Article 19.2. The choice of consensus as decision-making method can be explained by the fact that consensus makes acceptance and implementation more likely as everyone has agreed to the decision, unlike voting which can divide members and leave some feeling unheard.[403]

Article 19.4 states that each Contracting Party has one vote. This implies that each Contracting Party has an equal voice in the decision-making. According to the paragraph each Contracting State has to be represented at the sessions of the Governing Body by a single delegate, who will be the one to vote. The delegate can be accompanied by an alternate, experts and advisers.

[401] Respectively Appendix D and E in: Treaty Secretary, *Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture*, First Session of the Governing Body of the ITPGRFA, Doc. IT/GB-1/06/Report, Madrid, Spain, 12-16 June 2006.
[402] C. FRISON, *op. cit.,* p. 232.
[403] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 146.

However, these persons cannot vote, except in the case of their being duly authorized to substitute for the delegate. Article 19.4 starts with "subject to Article 19.6".

Article 19.6 says that a Member Organization of the FAO that is a Contracting Party and the member states of that Organization that are Contracting Parties shall exercise their membership rights and fulfil their membership obligations in accordance, *mutatis mutandis*, with the Constitution[404] and General Rules of FAO[405]. As for right now, there is only one Member Organization of the FAO that is a Contracting Party to the Treaty, which is the EU. All of the EU Member States are Contracting Parties to the Treaty as well.[406] The paragraph currently thus only applies to the EU and its Member States. It requires that provisions relating to the membership rights and obligations in the FAO Constitution and General Rules of FAO are applied, *mutatis mutandis*, to the membership of the EU and its Member States in the Governing Body.[407]

The areas of competences of the EU are set out in Articles 2 to 6 of the Treaty on the Functioning of the EU. Some of those areas involve matters which are included in the Treaty. This means that some matters in the Treaty are within the exclusive competence of the EU, some within the exclusive competence of the EU Member States and some are subject to shared competence.[408] Article II.8 of the FAO Constitution states that a Member Organization of FAO shall exercise membership rights, amongst which the right to vote, on an alternative basis with its Member States that are Member Nations of the FAO. If we apply this to the EU and its Member States it means that the EU shall exercises membership rights for matters in the Treaty within its exclusive competence.[409] For these matters, only the EU has the right to vote in the meetings of the Governing Body. Pursuant to Article II.10 of the FAO Constitution the EU exercises on matters within its competence an number of votes equal to the number of EU Member States that are Contracting Parties to the Treaty. Membership rights are exercised by

[404] Constitution of the Food and Agriculture Organization of the United Nations, Quebec, 16 October 1945.
[405] FAO, *General Rules of the FAO*, in: Basic texts of the Food and Agriculture Organization of the United Nations, Vol. I and II, 2017, p.17-70.
[406] An updated list of all Contracting Parties is available on the official website of the FAO: <www.fao.org/plant-treaty/countries/membership/en/>.
[407] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 150.
[408] Communication from the European Commission to the Council, *The role of the European Union in the Food and Agriculture Organisation (FAO) after the Treaty of Lisbon: Updated Declaration of Competences and new arrangements between the Council and the Commission for the exercise of membership rights of the EU and its Member States,* Brussels, 29 May 2013, COM(2013) 333 final, p. 7 (hereafter: Declaration of Competences); G. MOORE and W. TYMOWSKI, *op. cit.,* p. 149.
[409] Declaration of Competences, p. 7; G. MOORE and W. TYMOWSKI, *op. cit.,* p. 150.

the individual Member States for matters in the Treaty which are within their exclusive competence. For matters subject to shared competence, both the EU and Member States can participate in the discussions, but only one of the two can exercise the right to vote.[410]

On the base of Rule XLII.2 of the General Rules of FAO, the EU and its Member States are required to notify the Governing Body before every meeting of which, as between the EU and its Member States, has competence in respect of each specific item on the agenda of the meeting and which will exercise the right to vote in respect of each specific item on the agenda. The EU and its Member States have thoroughly done this since the First Session of the Governing Body.[411]

B. Functions

Pursuant Article 19.3 of the Treaty the general function of the Governing Body is to promote the full implementation of the Treaty, keeping in view its objectives. In light thereof, the paragraph lists a number of the Governing Body's more specific functions (Articles 19.3(a) to 19.3(n) of the Treaty).

From the analysis of the provisions of the Treaty, it has become clear that the text of the Treaty contains quite a lot of question marks and that many provisions required, or still require, further explanation. The role of the Governing Body as supreme decision-making power of the Treaty has thus been, and still is, very important.[412] The Governing Body has to "adopt and review resolutions on the major substantive issues arising in the implementation of the core systems, mechanisms and strategies of the Treaty."[413] Through these resolutions, in accordance with Articles 19.3(a) and 19.3(b), the Governing Body has to provide policy direction and guidance and adopt recommendations, plans and programs when necessary for the implementation of the Treaty and, in particular, for the operation of the MLS. The emphasis on the operation of the MLS is justified because as we have seen the Treaty has left a lot of matters related to the MLS

[410]Declaration of Competences, p. 7.
[411]The most recent example: Treaty Secretary*, Statement of Competence and Voting Rights Submitted by the European Union (EU) and its Member States*, Eight Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture, Doc. IT/GB-8/19/1/Inf.3, Rome, Italy 11-16 November 2019.
[412] FAO (2011), p. 115.
[413] Treaty Secretary, *Item 1 of the Provisional Agenda*, Seventh Session of the Governing Body of the ITPGRFA, Doc. IT/GB-7/17/2, Kigali, Rwanda, 30 October – 3 November 2017, paragraph 25.

open. For instance, the Governing Body has designed and adopted a SMTA (Article 12.4) and has determined the level, form and manner of the payment under Article 13.2(d)(ii).[414]

In accordance with Articles 18 and 19.3(c) the Governing Body has adopted at its first session, through Resolution 1/2006, the Funding Strategy for the implementation of the Treaty.[415] Pursuant Article 19.3(d) the Governing Body also has to adopt the budget of the Treaty. Accordingly, at every session the Governing Body adopts a budget for the coming *biennum*. Rule 3 of the Financial Rules of the Governing Body contains more precise modalities and requirements regarding the budget.

Article 19.3(e) enables the Governing Body to establish subsidiary bodies and their respective mandates and composition when necessary for the accomplishment of its functions, but this shall be subject to the availability of necessary funds in the budget of the Treaty. Rule 9.1 of the Rules of Procedure reaffirms this and adds that when the related expenses are to be borne by the FAO, the determination of such availability shall be made by the Director-General of the FAO. Also, before taking the decision to establish subsidiary bodies, the Governing Body has to consult a report from the Secretary or the Director-General of the FAO, as appropriate, on the administrative and financial implications of such establishment. Rule 9.2 calls for the Governing Body to determine the membership, terms of reference and procedures of the subsidiary bodies. Rule 9.3 requires each subsidiary body to elect its own Bureau, unless appointed by the Governing Body. Since its First Session the Governing Body has established many subsidiary bodies. To cite a few: the Ad Hoc Committee on Sustainable Use, the Ad Hoc Technical Expert Group on Farmers' Rights, the Ad Hoc Technical Advisory Committee on the SMTA and MLS, the Ad Hoc Advisory Committee on the Funding Strategy etc.[416] There are three permanent subsidiary bodies.[417] Firstly, the Bureau, which has been established accordingly to Article 19.11 of the Treaty. Secondly, the Compliance Committee (*cfr. infra Chapter 7, Section 2*). Thirdly, the Independent Panel of Experts, tasked with the screening and appraisal of project proposals received for each Call for Proposals under the Benefit-Sharing Fund.

[414] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 146.
[415] Resolution 1/2006.
[416] A list of all subsidiary bodies can be found on the website of the FAO: Appendix 2 in Treaty Secretary, *Reference Note on Subsidiary Bodies and Intersessional Processes,* Eight Session of the Governing Body of the ITPGRFA, Doc. IT/GB-8/19/16.2/Inf.1, Rome, Italy, 11-16 November 2019.
[417] *Ibidem.*

Another function of the Governing Body is to establish an appropriate mechanism, such as a Trust Account, for receiving and utilizing financial resources that will accrue to it for purposes of implementing the Treaty (19.3(f)). To recall, the Governing Body at its First Session has established the BSF and a Trust Account in order to receive and utilize financial contributions to the Benefit-sharing Fund.[418] Article 6.3 of the Financial Rules of the Treaty states that upon request by the Governing Body, FAO shall maintain a Trust Account or Accounts, as provided for in Article 19.3(f) of the Treaty, to implement Article 18 of the Treaty, and to receive the funds foreseen in Article 13.2 of the Treaty. In accordance with Article 6.3 of the Financial Rules, the Trust Account of the Benefit-sharing Fund is administered by FAO.[419]

Pursuant Article 19.3(j), the Governing Body also has to consider modalities of a strategy to encourage voluntary contributions, in particular, with reference to Articles 13 and 18 of the Treaty.

The Governing Body also has to approve the terms of agreements with the IARCs and other international institutions under Article 15, and review and amend the MTA in Article 15 (19.3(n)). We have seen that the Governing Body has done this. The Governing Body must also consider and adopt, as required, amendments to the Treaty or annexes to the Treaty, in accordance with the provisions of Article 23 and 24 (Articles 19.3(h) and 19.3(i)).

The Governing Boy has to establish and maintain cooperation with other relevant international organizations and treaty bodies, including in particular the Conference of the Parties to the CBD, on matters covered by this Treaty, including their participation in the funding strategy (Article 19.3(g)). The Governing Body has to take note of relevant decisions of the Conference of the Parties to the CBD and other relevant international organizations and treaty bodies (Article 19.3(l)). In turn, the Governing Body also has to inform them of matters regarding the implementation of the Treaty (Article 19.3(m)). The role of the Governing Body is thus clearly to establish a cooperation relationship with other relevant bodies. The specific reference to the Conference of the Parties to the CBD can be seen in the light of Article 1.2 of the Treaty which states that the objectives of the Treaty can only be attained by closely linking the Treaty with the CBD and the FAO.

[418] Resolution 1/2006, paragraph 14.
[419] FAO (2014), p. 44.

The Governing Body also has to perform other functions which may be necessary for the fulfillment of the objectives of the Treaty (19.3(k)). A number of provisions in the Treaty which require the Governing Body to take actions are based on this general provision. For instance, the adoption of the SMTA (Article 12.4), the setting of standards with respect to access to PGRFA in *in situ* conditions (Article 12.3h) and the assessment of the progress in including non-publicly held Annex I PGRFA in the MLS (Article 11.4).[420]

C. Sessions

Article 19.9 states that the Governing Body shall hold regular sessions at least once every two years and that these sessions should, as far as possible, be held back-to-back with the regular sessions of the CGRFA. The reason therefore is that this will make it easier to coordinate the actions of the Governing Body and the actions of the CGRFA relevant to the Treaty like the preparation of the reports on the state of the world's PGRFA as well as the updating of the GPA.[421] Rule 4.3 of the Rules of Procedure says that the Chairperson of the Governing Body shall convene the sessions, with the agreement of the Bureau and in consultation with the Director-General of the FAO and Secretary. Rule 4.7 establishes that the sessions of the Governing Body shall be held in public, unless the Governing Body requires otherwise.

Up to this day there have been eight regular sessions.[422] It's during these regular sessions that the Governing Body has adopted many regulations and given policy direction and guidance on a number of matters related to the Treaty. The ninth session is expected to take place in 2021 in India and will address items on general policy and implementation of the Treaty.

Article 19.8 calls for a quorum at any session of the Governing Body in order to ensure that decisions aren't taken with too few Contracting Parties present. This quorum is constituted by the presence of a majority of the Contracting Parties (so half of the Contracting Parties plus one). This requirement is also word for word written in Rule 4.8 of the Rules of Procedure.

Article 19.5 says that the UN, its specialized agencies and the International Atomic Energy Agency, as well as any Non-Contracting State to the Treaty, may be represented as observers at the sessions of the Governing Body. This is actually a right which means that they have to

[420] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 148.
[421] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 150.
[422] A report of all regular sessions can be accessed on the website of the FAO: <www.fao.org/plant-treaty/meetings/en/>.

be admitted *ipso facto* as observers.[423] However, this is not the case for other bodies or agencies, which have to go through an admission procedure for each meeting they want to attend as observer.[424] The paragraph states that any other body or agency, whether governmental or not, qualified in fields relating to conservation and sustainable use of PGRFA has to inform the Secretary of its wish to be represented as an observer at a session of the Governing Body. It can then be admitted as observer unless at least one third of the Contracting Parties present at the meeting in question object. However, such refusal doesn't seem to occur in practice. Usually observers are NGOs including farmers' organizations, universities or other research institutions. [425] Finally, the paragraph says that the admission and participation of observers shall be subject to the Rules of Procedure adopted by the Governing Body in accordance with Article 19.7. Rule 7 of the Rules of Procedure pretty much repeats what Article 19.5 says. It also fixes delays for the Secretary to notify the institutions of upcoming sessions of the Governing Body and says that once admitted as observer, the Chairman has to determine the observer's right to participate in the meeting. However, this is always without the right to vote.

Article 19.10 enables the Governing Body to hold special sessions when the Governing Body deems it necessary or following the written request of a Contracting Party, provided that this request is supported by at least on third of the Contracting Parties. This is affirmed in Rule 4.2 of the Rules of Procedure. Up to this day, no special session has been held.

D. The Bureau

Another administrative body established by the Treaty is the Bureau. Article 19.11 requires the Governing Body to elect a Chairperson and Vice-Chairpersons, which together form the Bureau, in conformity with the Rules of Procedure.[426] They are elected by the Governing Body at the beginning of every session and serve during the whole biennium.[427] Rule 2.1 of the Rules of Procedure specifies that one Vice-Chairperson per FAO region other than the region of the Chairperson shall be elected as well as a Rapporteur from among the delegates, alternates, experts and advisers of the Contracting Parties. In electing the Bureau, the Governing Body has to respect the principle of rotation. No member of the Bureau can be re-elected for a third consecutive term. Rule 2.2 and 2.3 detail the functions of the Bureau. The Bureau has to serve

[423] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 149; C. FRISON, *op. cit*., p. 231.
[424] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 149.
[425] C. FRISON, *op. cit*., p. 231.
[426] The current Chairperson is Mr. Muhamad Sabran.
[427] C. FRISON, *op. cit*., p. 233.

as Bureau of any special session and has to provide guidance to the Secretary in the preparation for, and conduct of, sessions of the Governing Body. The Chairperson has to preside all sessions of the Governing Body and exercise other functions as well which may be required to facilitate the work of the Governing Body. In other words, the Bureau's aim is to facilitate and ensure the smooth running of all Governing Body sessions and inter-sessional meetings. The Chairperson presiding the sessions goes through each item on the agenda while giving the attendees the chance to speak and taking notes of requests. Although the Bureau is an administrative body, in practice it also exercises political power. For instance, sometimes the Bureau has to meddle in the negotiations during sessions to unblock difficult situations or the Bureau has previously organized confidential meetings to facilitate dialogue between representatives of each FAO region. This political role has been contested by Contracting Parties. [428]

7.1.2 The Secretary (Article 20)

Article 20.1 requires the Director-General of the FAO, with the approval of the Governing Body, to appoint the Secretary of the Governing Body. The Secretary shall be assisted by such staff as may be required. Rule 3 of the Rules of Procedure reaffirms this. The current Secretary of the Treaty is Dr. Kent Nnadozie.[429]

At its First Session in 2006 the Governing Body adopted the Procedures for the Appointment of the Secretary of the Governing Body of the International Treaty as well as the Terms of Reference of the Secretary.[430] These Procedures establish that the term of office of the Secretary is four years and renewable, but don't establish a renewal procedure. At the Seventh Session of the Governing Body the FAO Legal Office prepared a document proposing a new procedure for the selection and appointment of the Secretary, which would replace the 2006 one, and addressing the renewal of the term of office of the Secretary.[431] The Governing Body considered

[428] *Ibidem*.
[429] Treaty Secretary, *Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture*, Eight Session of the Governing Body of the ITPGRFA, Doc. IT/GB-8/19/Report, Rome, Italy, 11-16 November 2019.
[430] Treaty Secretary, *Appointment of the Secretary and other matters related to the establishment of the Secretary*, First Session of the Governing Body of the ITPGRFA, Doc. IT/GB-1/06/11, Madrid, Spain, 12-16 June 2006.
[431] Treaty Secretary, *Procedures for Appointment and Renewal of the Secretary of the Governing Body of the International Treaty*, Seventh Session of the Governing Body of the ITPGRFA, Doc. IT/GB-7/17/30, Kigali, Rwanda, 30 October – 3 November 2017.

the document, but failed to reach a consensus on the proposed procedures.[432] At its Eight Session the Governing Body considered the issue again and provided guidance to the Bureau of the Ninth Session to continue the consultation process with the FAO.[433]

Article 20.2 to 20.5 lists the functions of the Secretary. The Secretary has to arrange and provide administrative support for sessions of the Governing Body and for subsidiary bodies. The Secretary also has to assist the Governing Body in carrying out its functions and perform any specific tasks assigned to him or her by the Governing Body. It is important that he or she reports on its activities to the Governing Body. The communication to all Contracting Parties and to the Director-General of the decisions of the Governing Body within sixty days of adoption and of the information received from Contracting Parties is also part of the functions of the Secretary. So is the provision of documentation in the six languages of the UN for sessions of the Governing Body. These include Arabic, Chinese, English, French, Russian and Spanish. It is very important that the Secretary cooperates with organizations and treaty bodies, particularly with the Secretariat of the CBD, in achieving the objectives of this Treaty.

7.2 Compliance (Article 21)

Article 21 reads as follows: "the Governing Body shall, at its first meeting, consider and approve cooperative and effective procedures and operational mechanisms to promote compliance with the provisions of this Treaty and to address issues of non-compliance. These procedures and mechanisms shall include monitoring, and offering advice or assistance, including legal advice or legal assistance, when needed, in particular to developing countries and countries with economies in transition". Due to long and difficult negotiations, it was only at its Fourth Session in 2011 that the Governing Body adopted the "procedures and operational mechanisms to promote compliance and address issues of non-compliance" in accordance with Article 21 (hereafter: compliance procedures and mechanisms).[434]They consist of ten sections.

[432] Treaty Secretary, *Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture*, Seventh Session of the Governing Body of the ITPGRFA, Doc. IT/GB-7/17/Report, Kigali, Rwanda, 30 October – 3 November 2017.
[433] Appendix D in: Treaty Secretary, *Report of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture*, Eight Session of the Governing Body of the ITPGRFA, Doc. IT/GB-8/19/Report, Rome, Italy, 11-16 November 2019.
[434] Governing Body, Resolution 2/2011*, Procedures and operational mechanisms to promote compliance and address issues of non-compliance*, Fourth Session of the Governing Body of the ITPGRFA, Bali, Indonesia, 14-18 March 2011.

Section I defines the objective of the compliance procedures and mechanisms. The objective, accordingly to Article 21, is to promote compliance with all provisions of the Treaty and to address issues of non-compliance. Compliance procedures and mechanisms have to be distinguished from dispute settlement (Article 22 of the Treaty) and from the possibility to seek recourse regarding disputes arising under MTAs (Article 12.5 of the Treaty). Compliance procedures and mechanisms deal with ways of discussing and dealing with general issues of compliance and non-compliance. Their aim is to promote compliance and address difficulties relating to compliance, including difficulties of individual Contracting Parties, with a generic approach. They are non-adversarial in nature and can be raised by any Contracting Party and the Governing Body, outside of any dispute. Moreover, the response of a compliance mechanism to compliance and non-compliance issues is not limited to any Contracting Party and is not binding. Dispute settlement mechanisms, in contrary, deal with specific disputes between two or more Contracting Parties regarding the interpretation or implementation of the Treaty. They are adversarial in nature and are limited by the scope of the actual dispute. They can only be raised by parties to the dispute.[435]

Section II defines the principles of the compliance procedures and mechanisms. They shall be simple, cost-effective, facilitative, non-adversarial, non-judicial, legally non-binding and cooperative in nature. They shall be guided by the principles of transparency, accountability, fairness, expeditiousness, predictability, good faith and reasonableness. The words "non-adversarial" and "cooperative", which is also used in Article 21, imply that the procedures and mechanisms should stimulate amicable dialogue.[436] Finally, any interpretation of the Treaty is for the Contracting Parties to make. This last paragraph gives the Contracting Parties some margin of appreciation in the implementation of the Treaty, although it doesn't prevent any agreed interpretations to be made on certain matters at the sessions of the Governing Body.[437]

The reference to "operation mechanisms" in Article 21 suggests the possibility to establish a Compliance Committee. In accordance with Article 19.3e of the Treaty, a Compliance Committee to promote compliance and address non-compliance issues was established by the Governing Body at its First Session.[438] Section III says that the Committee shall consist of 14

[435] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 155-156.
[436] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 155.
[437] C. FRISON, *op. cit*., p. 222.
[438] Governing Body, Resolution 3/2006, *Compliance*, First Session of the Governing Body of the ITPGRFA, Madrid, Spain, 12-16 June 2006.

members, two from each FAO region and not more than one from a Contracting Party, elected by the Governing Body for a period of four years. It shall hold meetings as necessary, subject to the availability of financial resources. Section III.6 and the Preamble of these compliance procedures and mechanisms require the Committee to develop further rules of procedure. These rules of procedure shall be submitted to the Governing Body at its Fifth Session for consideration and approval. Accordingly, the Compliance Committee submitted its Rules of Procedure, which the Governing approved at its Fifth Session.[439] These include rules on the decision making process of the Committee, its composition, its meetings, the format for submissions, the importance of confidentiality etc.

Section IV establishes the functions that the Committee shall execute with a view of promoting compliance and addressing issues of non-compliance. The Committee has to offer advice and assistance to Contracting Parties on matters relating to compliance with a view to assisting them to comply with their obligations under the Treaty. The Committee also has to assist the Governing Body in monitoring the Contracting Parties' implementation of the Treaty on the basis of reports of the Contracting Parties as well as address issues of non-compliance and statements and questions concerning the implementation of the Treaty.[440] The Committee has to submit a report to each Governing Body session reflecting on the Committee's work and the conclusions and recommendations of the Committee.

Another important aspect of promoting compliance is to monitor the implementation by the Contracting Parties of their obligations under the Treaty. Section V says that each Contracting Party has to submit to the Committee a report on the measures it has taken to implement its obligations under the Treaty. The first report shall be taken three years after the approval by the Governing Body of a standard reporting format developed by the Committee, subsequent reports are to be submitted every five years thereafter. The Governing Body approved the Standard Reporting Format at its Fifth Session in 2013, meaning that the first report was due in 2016.[441] However, the Governing Body extended the deadline to 1 October 2018 for the

[439] Annex I "Rules of Procedures of the Compliance Committee" in Governing Body, Resolution 9/2013 Rev. 1, *Procedures and operational mechanisms to promote compliance and address issues of non-compliance*, Fifth Session of the Governing Body of the ITPGRFA, Muscat, Oman, 24-28 September 2013.
[440] Although, Rule IV states that the Committee shall not consider any questions regarding the interpretation, implementation or compliance with the SMTA by parties or potential parties to it.
[441] Annex II "Standard Reporting Format" in Governing Body, Resolution 9/2013 Rev.1, *Procedures and operational mechanisms to promote compliance and address issues of non-compliance*, Fifth Session of the Governing Body of the ITPGRFA, Muscat, Oman, 24-28 September 2013.

Contracting Parties that had not submitted their report yet.[442] The Committee has to consider the reports up to 12 months before the next session of the Governing Body and has to submit to the Governing Body a synthesis on the basis of the reports. At the request of the Governing Body, the Committee shall develop recommendations on this procedure of monitoring and reporting, including a review of the Standard Reporting Format, and submit it to the Governing Body.[443] In order to facilitate the reporting by Contracting Parties and monitoring of the implementation of the Treaty, the Secretary has placed an Online Reporting System (ORS) to streamline the reporting process through electronic means.[444]

Section VI concerns the procedures regarding submissions relating to issues of non-compliance. The Committee shall receive, through the Secretary, any submissions relating to issues of non-compliance from the Governing Body or from any Contracting Party with respect to itself or with respect to another Contracting Party. Any submission shall include the matter of concern and the relevant provisions of the Treaty. Section VI sets out the procedure of how such submissions shall be considered by the Committee. Confidentiality is an essential element of the consideration of the submission.

Section VII establishes measures that the Committee may take in order to promote compliance and address issues of non-compliance, taking into account such factors as the cause, type, degree and frequency of non-compliance. This is what the expression "effective" in Article 21 suggests, the response to a Contracting Party's non-compliance should be balanced against these factors.[445] The measures include providing advice or assistance, including legal advice or legal assistance, to the Contracting Party in respect of which an issue has been raised. This is in accordance with Article 21 which states that the compliance procedure shall include the offering of advice or assistance, including legal advice or legal assistance. The Committee may also request or assist the Contracting Party concerned to develop an action plan which addresses the issue of non-compliance. Moreover, it can invite the Contracting Party concerned to submit progress reports on its efforts to comply with the Treaty. Upon the recommendations of the Committee, the Governing Body can provide legal, financial and technical assistance to the

[442] Governing Body, Resolution 8/2017, *Compliance*, Seventh Session of the Governing Body of the ITPGRFA, Doc. GB-7/17/Res8, Kigali, Rwanda, 30 October – 3 November 2017.
[443] At its Seventh Session the Governing Body requested the Compliance Committee to review the Standard Reporting Format: Compliance Committee, *Review of the Standard Reporting Format*, Third Meeting of the Compliance Committee, Doc. IT/GB8/CC-3/19/5, Rome, Italy, 31 January – 1 February 2019.
[444] http://faoitpgrfa.ort-production.linode.unep-wcmc.org
[445] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 155.

Contracting Party concerned or take any other actions it deems appropriate, in accordance with the Treaty.

Section VIII says that the Committee shall consider relevant information from the Governing Body, the Contracting Party in respect of which an issue has been raised and the Contracting Party that has made a submission with respect to another Contracting Party. It can also seek or receive freely available information from the Secretary or other relevant sources as well as seek expert advice.

Section IX establishes other procedures regarding the promotion of compliance. A Contracting Party can, through the Secretary, address statements and questions concerning the implementation of its own obligations under the Treaty to the Committee. The Committee shall also consider any questions concerning the implementation of Treaty referred to it by decision of the Governing Body. The Secretary shall list such questions he or she receives and present them to the Governing Body for consideration or referral to the Committee. The Committee can make recommendations to the Governing Body concerning these statements or questions. It can also reject to consider a statement or question, bearing in mind the objectives of the Treaty and motivating this decision.

Section X says that the Governing Body shall review the effectiveness of these compliance procedures and mechanisms within six years of their approval and periodically thereafter as well as take appropriate action. Accordingly, since the Governing Body approved the procedures in 2011, a review was due in 2017 at its Seventh Session. However, at its Seventh Session the Governing Body decided to postpone the review to the Eight Session and at its Eight Session it decided to postpone to its Ninth Session in 2021.[446]

7.3 Settlement of Disputes (Article 22)

Dispute settlement mechanisms deal with specific disputes between two or more specific Contracting Parties regarding actions committed in the past. They are limited by the scope of the actual dispute and can only be raised by parties to the dispute. The Treaty doesn't define "dispute", although, Article 22.1 refers to "disputes concerning the interpretation or application

[446] Compliance Committee, *Report of the Compliance Committee*, Eight Session of the Governing Body, Doc. IT/GB-8/19/13, Rome, Italy, 11-16 November 2019.

of the Treaty". Disputes aren't limited to purely legal differences, any combination of facts, policies and provisions of the Treaty can constitute a dispute.[447]

Under international law states have the obligation to resolve disputes in a peaceful manner.[448] Accordingly, Article 22 of the Treaty provides for a cascade of peaceful dispute settlement mechanisms, which are gradually more intrusive and formal. Article 22.1 requires Contracting Parties to attempt to resolve their dispute by negotiation. So, when a dispute has arisen, the Parties concerned shall first attempt to negotiate as this offers the possibility to find a mutually satisfactory solution. Article 22.2 says that if parties have failed to reach an agreement by negotiation, they may jointly seek the good offices of a third party or request mediation by a third party. The presence of a third party allows the disputing Parties to acquire advice of a neutral and impartial person. Both parties have to agree on the third party, who can be a Contracting Party external to the dispute, one of the bodies created under the Treaty, an external body or a professional mediator. The third party's advice or proposal aren't legally binding.[449] Pursuant to Article 22.3, when ratifying, accepting, approving or acceding to the Treaty, or at any time thereafter, a Contracting Party may declare in writing to the Depositary that for a dispute not resolved by negotiation, mediation or good offices, it accepts arbitration (Article 22.3a) and/or submission of the dispute to the International Court of Justice (ICJ)(Article 22.3b), as compulsory. Article 22.3(a) states that arbitration has to be carried out in accordance with the arbitration procedure laid down in Part 1 of Annex II to the Treaty, which is the standard arbitration procedure found in many international agreements. Arbitration implies that someone external to the dispute, whom the Parties have chosen themselves and trust, resolves the dispute. Concerning the ICJ, the procedures to be applied are laid down in the Statute of the ICJ. The arbitral award and the judgement of the ICJ are binding decisions. All EU Member States as well as Myanmar have accepted arbitration as a compulsory mechanism for dispute settlement in last resort, while only one Contracting Party, Bolivia, has accepted the submission of the dispute to the ICJ.[450] This can be explained by the fact that the procedure in front of the ICJ is costly and time consuming.[451]

[447] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 157.
[448] For instance, Article 33 of the UN Charter provides for peaceful dispute settlement mechanisms.
[449] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 157-158.
[450]Both the EU and Myanmar have declared this upon arrival to the Treaty: <www.fao.org/fileadmin/user_upload/legal/docs/033s-e.pdf> (accessed 25 July 2020).
[451] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 159.

Last but not least, Article 22.4 states that if negotiation, mediation and good offices have failed and if the disputing Parties have not accepted any or the same procedures set out in Article 22.3, the dispute shall be submitted to conciliation in accordance with Part 2 of Annex II to the Treaty, unless the parties otherwise agree.

7.4 Final clauses (Articles 23-35)

The Treaty, like any other international agreement, contains final clauses.

7.4.1 Amendments of the Treaty (Article 23)

Sometimes Contracting Parties find it necessary to modify a certain treaty provision if they realize it is too difficult to implement or if they want to take a step forward. Pursuant Article 23.1 of the Treaty any Contracting Party can propose amendments to the Treaty. Article 23.2 states that amendments are to be adopted at a session of the Governing Body and Article 23.3 provides that amendments can only be adopted by consensus of the Contracting Parties present at the session of the Governing Body. This is in accordance with Article 19.2 of the Treaty. As we can imagine, such consensus makes it hard to obtain an actual amendment. However, Contracting Parties insisted upon during the negotiations as it is "a way of ensuring that their essential interests would be taken into account in all aspects of the functioning of the Treaty, including its amendments".[452]

Article 23.4 says that an amendment adopted by the Governing Body comes into force among Contracting Parties having ratified, accepted or approved it on the ninetieth day after the deposit of instruments of ratification, acceptance or approval by two-thirds of the Contracting Parties. After that, the amendment enters into force for any other Contracting Party on the ninetieth day after that Contracting Party deposits its instrument of ratification, acceptance or approval of the amendment. This means that amendments can enter into force at different times for different States.

Finally, Article 23.5 concerns Member Organizations of FAO. It says that an instrument deposited by a Member Organization of FAO shall not be counted as additional to those deposited by member states of such an organization. For instance, if the EU and all its Member

[452] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 161.

States (27) deposit instruments, the total number of instruments has to be counted as 27 and not 28.

7.4.2 Annexes (Article 24)

The Treaty contains two annexes. To recall, Annex I contains the list of crops covered under the MLS and Annex II lays down the procedures for arbitration and conciliation. Article 24.1 states that these annexes form an integral part of the Treaty and that a reference to the Treaty constitutes at the same time a reference to the annexes. Article 24.2 says that if annexes are to be amended, this has to happen according to Article 23.

7.4.3 Signature (Article 25)

Article 25 states that the Treat shall be open for signature at the FAO from 3 November 2001[453] to 4 November 2002 by all Members of FAO and any States that are not Members of FAO but are Members of the UN, or any of its specialized agencies or of the International Atomic Energy Agency. States wanting to join the Treaty after this period of signature is over will have to follow the procedure of accession of Article 27.

Article 12 of the Vienna Convention on the Law of the Treaties (VCLT) states that the consent of a State to be bound by a treaty is expressed by the signature only when the treaty provides that signature shall have that affect or if it is otherwise established that signature should have that effect or if the intention of a State to give that effect to the signature appears from the full powers of its representative or was expressed during the negotiation.[454] This is not the case of the Treaty, which establishes that a State will only be bound by the Treaty after ratification, acceptance, approval (Article 26 of the Treaty) or accession (Article 27 of the Treaty). When a State signs the Treaty, it reflects the State's consent to be part of the Treaty, however, it doesn't bind the State to the Treaty yet. The signature, however, does entail a negative obligation. According to Article 18 VCLT the signing State has to refrain from acts which would defeat the object and purpose of the Treaty until it has made clear its intention not to become a party to the Treaty.

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[453] The Resolution approving the text of the Treaty was adopted by the FAO Conference on 3 November 2001; FAO Conference, Resolution 3/2001, *Adoption of the International Treaty on Plant Genetic Resources for Food and Agriculture and Interim Arrangements for its Implementation,* Thirty-first Session of the FAO Conference, Rome, 3 November 2001, No. 43345.

[454] UN, *Vienna Convention on the Law of the Treaties*, Vienna, 23 May 1969, Treaty Series, vol. 1155, p. 331 (hereafter: VCLT).

The use of "Members of FAO" instead of "Member Nations of FAO" enables the signature of Member Organizations of the FAO, like the EU.[455]

7.4.4 Ratification, Acceptance, Approval (Article 26) or Accession (Article 27)

Article 26 says that the Treaty shall be subject to ratification, acceptance or approval by the Members of FAO and States that are not Members of FAO but are Members of the UN or any of its specialized agencies or of the International Atomic Energy Agency. Instruments of ratification, acceptance or approval shall be deposited with the Depositary. The ratification, approval or acceptance of the Treaty by a State has as effect to bind that State to the Treaty.[456]

Once the Treaty is closed for signature, a State can still join by acceding to the Treaty. In accordance with Article 25, the Treaty was closed for signature on November 4th 2002. All States or Member Organizations having joined the Treaty since thus underwent the accession procedure. The effect of accession is the same as ratification, approval or acceptance, meaning the State acceding is bound by the Treaty.[457] Article 27 says that the Treaty shall be open for accession by all Members of the FAO and States that are not Members of the FAO but are Members of the UN, or any of its specialized agencies or of the International Atomic Energy Agency from the date on which the Treaty is closed for signature. Instruments of accession shall be deposited with the Depositary.

As for right now there are 147 contracting parties to the Treaty, including the EU.[458]

7.4.5 Entry into force (Article 28)

Article 28.1 states that the Treaty shall enter into force on the ninetieth day after the deposit of the fortieth instrument of ratification, acceptance, approval or accession, provided that at least twenty instruments of ratification, acceptance, approval or accession have been deposited by Members of FAO. The Treaty entered into force on June 29th 2004.

Article 28.2 states that for each Member of FAO and any State that is not a Member of FAO but is a Member of the UN or any of its specialized agencies or of the International Atomic

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[455] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 165.
[456] VCLT, Article 16.
[457] *Ibidem.*
[458] An updated list of all Contracting Parties is available on the official website of the FAO: <www.fao.org/plant-treaty/countries/membership/en/>.

Energy Agency that ratifies, accepts, approves or accedes to this Treaty after the deposit, in accordance with Article 28.1 of the fortieth instrument of ratification, acceptance, approval or accession, the Treaty shall enter into force on the ninetieth day following the deposit of the instrument of ratification, acceptance, approval or accession.

7.4.6 Member Organizations of FAO (Article 29)

Article 29 concerns the Member Organization of the FAO. Currently the Treaty only has one Member Organization, the EU. The EU, then still the European Community, signed the Treaty on the June 6th 2002 and approved it on March 31st 2004.[459]

Article 29.1 says that when a Member Organization of FAO deposits an instrument of ratification, acceptance, approval or accession for this Treaty, the Member Organization shall, in accordance with Article II.7 of the FAO Constitution[460], notify any change regarding its distribution of competence to its declaration of competence submitted under Article II.5 of the FAO Constitution[461] as may be necessary in light of its acceptance of the Treaty.

In accordance with Article II.7 of the FAO Constitution the EU, upon its approval, stated the following: "the European Community declares that its declaration of competence submitted to FAO on 4 October 1994 under Article II.5 of the FAO Constitution still applies in light of its acceptance of the International Treaty on Plant Genetic Resources for Food and Agriculture."[462] However, since then the competences conferred to the EU by the Treaties which are relevant for the activities of the FAO and the Treaty have evolved substantially. That's why the EU submitted an updated Declaration of Competences in May 2013 which replaces the 1994 Declaration.[463] The Declaration of Competences lists the competences conferred to the EU by

[459] Council Decision 2004/869/EC of 24 February 2004 concerning the conclusion, on behalf of the European Community, of the International Treaty on Plant Genetic Resources for Food and Agriculture, OJ L 378/1, 23 December 2004; EC Press Release, *EC ratifies international treaty on plant genetic resources improving access to seeds and agricultural biodiversity*, Brussels, 31 March 2004. Available at <https://ec.europa.eu/commission/presscorner/detail/en/IP_04_433> (accessed 28 July 2020).

[460] Article II.7 of the FAO Constitution: "Any change regarding the distribution of competence between the Member Organization and its Member States shall be notified by the Member Organization or its Member States to the Director-General, who shall circulate such information to the other Member Nations of the Organization."

[461] Article II.5 of the FAO Constitution: "Each regional economic integration organization applying for membership in the Organization shall, at the time of such application, submit a declaration of competence specifying the matters in respect of which competence has been transferred to it by its Member States."

[462] This declaration can be found in Annex C of the Council Decision 2004/869/EC.

[463] Communication from the European Commission to the Council, *The role of the European Union in the Food and Agriculture Organisation (FAO) after the Treaty of Lisbon: Updated Declaration of Competences and new arrangements between the Council and the Commission for the exercise of membership rights of the EU and its Member States,* Brussels, 29 May 2013, COM(2013) 333 final.

the Treaties, the competences of the EU Member States as well as the shared competences which are most relevant for the activities of the FAO.[464]

Article 29.1 continues by stating that any Contracting Party can, at any time, request a Member Organization of FAO that is a Contracting Party to the Treaty to provide information as to which, as between the Member Organization and its members states, is responsible for the implementation of any particular matter covered by the Treaty. The Member Organization shall provide this information within a reasonable time. The ratio behind this provision is that Contracting Parties find it important to know who speaks for the EU and its Member States on a particular issue and who is responsible between the EU and its Member States to fulfill a certain obligation under the Treaty.[465]

Pursuant Article 29.2 instruments of ratification, acceptance, approval, accession or withdrawal, deposited by a Member Organization of FAO, shall not be counted as additional to those deposited by its Member States. This is paragraph is almost identical to Article 23.5 relating to the amendments of the Treaty. To recall, if the EU and all its Member States (27) deposit instruments, the total number of instruments has thus to be counted as 27 and not 28. The ratio of this provision is to avoid that the instruments of the EU or its Member States would be counted twice and that they would have a double voice.[466]

7.4.7 Reservations (Article 30)

According to Article 30 no reservations can be made to the Treaty. A reservation is a "unilateral statement made by a state, when signing, ratifying, accepting, approving, or acceding to a treaty, whereby it purports to exclude or modify the legal effect of certain provisions of the Treaty in their application to that state".[467] The ratio behind this prohibition is probably the desire to maintain a balance between the obligations of the Treaty.[468]

7.4.8 Non-Parties (Article 31)

[464] Communication from the European Commission to the Council, *op. cit*.,p. 4.
[465] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 173.
[466] *Ibidem.*
[467] VCLT, Article 2.
[468] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 175.

Article 31 requires Contracting Parties to encourage any Member of the FAO or other State who is not a Party to the Treaty, to become a Party. This Article reflects the desire of the drafters to have the application of the Treaty be as wide as possible.[469]

7.4.9 Withdrawals (Article 32)

Article 32.1 states that a Contracting Party can withdraw from the Treaty at any time after two years from the date on which the Treaty entered into force. The Contracting Party has to notify the Depositary of its decision to withdraw and the Depositary has to inform all Contracting Parties of this withdrawal. Article 32.2 states that the withdrawal takes effect on year from the date of receipt of the notification. Fortunately, up to this day there has been no withdrawal.

7.4.10 Termination (Article 33)

Pursuant Article 33.1 the Treaty shall be automatically terminated when, as a result of withdrawals, the number of Contracting Parties is inferior to forty, unless the remaining Contracting Parties unanimously decide otherwise. Following the logic of Article 29.2, the EU shall not be counted in addition to its Member States when determining if the number has dropped below forty. Article 33.2 requires the Depositary to inform all remaining Contracting Parties when their number has dropped below forty. Article 33.3 states that if termination occurs, the disposition of the assets has to be governed by financial rules to be adopted by the Governing Body.

7.4.11 Depositary (Article 34)

Article 34 gives the Director-General of FAO the quality of Depositary of the Treaty. The Depositary of the Treaty has important formal functions, which have been addressed throughout the analysis of previous provisions.

7.4.12 Authentic Texts (Article 35)

Article 35, the last article of the Treaty, states that the Arabic, Chinese, English, French, Russian and Spanish texts of the Treaty are all equally authentic texts. The terms of the Treaty should

[469] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 177.

have the same meaning in all authentic texts. In the case of an discrepancy between two or more authentic texts, an amendment should be made in accordance with Article 23 of the Treaty.[470]

[470] G. MOORE and W. TYMOWSKI, *op. cit.,* p. 185.

PART 3 – CASE STUDY: IMPLEMENTATION OF THE TREATY IN ETHIOPIA

Ethiopia, officially the Federal Democratic Republic of Ethiopia, is a very interesting country to study because of its rich agrobiodiversity and its great achievements in the conservation of its PGRFA. Moreover, Ethiopia has also been one of the leading countries regarding the promotion of community and farmers' rights in Africa. All of this, while also being among the world's poorest countries in economic terms, facing immense food insecurity. This is what motivated the choice of Ethiopia as subject for the case study of the implementation of the Treaty.

In the first chapter the state of PGRFA in Ethiopia is briefly looked upon. The chapters thereafter give an overview of how Ethiopia has implemented the Treaty's most important obligations under the Treaty, based on the country's report as well as additional information.

Chapter 1. State of PGRFA in Ethiopia

The existence of diverse ecosystems, farming systems, socio-economic conditions and cultures have made Ethiopia one of the countries with the highest diversity in PGRFA.[471]

1.1 Ethiopia's climatic diversity

Ethiopia is located in East Africa and has a total surface of more than 1.100.000 square kilometers. Its location and large surface make Ethiopia a country with an important topographic diversity. As a result of its diversified topography, Ethiopia has a great diversity of macro-and micro-climates which vary mostly with the altitude. The Great Rift Valley runs from the northeast to southwest of the country and separates the western and south-eastern highlands, which together form the Ethiopian highlands.[472] These are a vast mass of mountains which cover most of the country and know a more temperate and cool climate. The highlands are surrounded by lowlands where the climate is hot and arid, coping with important drought. Especially in the east where there is a warm desert climate. The south-west of Ethiopia is home to tropical forests. The rainfall varies widely in different parts of the country.[473] The south western parts of the country receive the heaviest rainfall thanks to a monsoon occurring from June to September. In the south-east of the country there are two small rainy periods, which

[471] Ethiopian Biodiversity Institute (EBI), *Ethiopia: Third Country Report on the State of Plant Genetic resources for Food and Agriculture*, Addis Ababa, October 2012, p. 23. Hereafter: EBI (2012).
[472] EBI (2012), p. 12.
[473] EBI (2012), p. 13.

sometimes don't even occur, causing drought.[474] The important climatic diversity, range of altitudes, rainfall patterns and soil variability have led to diverse ecosystems hosting a great diversity of plants and animals, making Ethiopia a very rich country resource wise.[475]

1.2 Ethiopia's agricultural sector

Agriculture is the key driver of Ethiopia's economy, in terms of GDP, export and employment, and of Ethiopia's food security. Agriculture contributes about 50% of the country's gross domestic product (GDP). Over 85% of the population depends directly on small-scale agriculture for their livelihood.[476] Ethiopia's diverse ecosystems and resulting natural plant diversity, coupled with centuries of selection by the natural environment and farmers, have led Ethiopia to be a country with an enormous crop genetic diversity. Ethiopian crop species, which for the most part are farmers' varieties, and their related wild species have an immense interspecific diversity and intraspecific diversity.[477] They have evolved in specific environments and contain a diversity of desirable traits.[478] Because of its enormous diversity of PGRFA, it isn't surprising that Ethiopia is the center of origin of many crops, including coffee (*Coffea arabica*), tef, enset, noug, Ethiopian potato, Ethiopian mustard, chat etc. It also is the primary center of diversity of crops, such as tetraploid wheats, barley, sorghum, peas, tef, enset, chichpea, lentil etc.[479]

The agricultural crop production in Ethiopia largely depends on local farmers' varieties. 95% of the cultivated area in Ethiopia is cropped with farmers' varieties, while only 5% is cropped with improved varieties. Farmers prefer the farmers' varieties because they have useful agronomic traits which are adapted to the various local conditions, while improved crop varieties aren't locally adapted and are more expensive.[480]

The reason that a diversity of crops can be maintained and cultivated by farmers in Ethiopia is also due to the fact that farming is practiced under diverse farming systems and cultural

[474] <https://journeysbydesign.com/destinations/ethiopia/when-to-go> (accessed 3 August 2020).
[475] EBI (2012), p. 13.
[476] EBI (2012), p. 14.
[477] EBI (2012), p. 47.
[478] R. FEYISSA, G. GEZU, B. TSEGAYE and T. DESALEGN, *On-farm management of plant genetic resources through community seed banks in Ethiopia*, in W.S. DE BOEF, A. SUBEDI, N. PERONI, M. THIJSSEN and E. O'KEEFFE (Eds.) *Community Biodiversity Management: Promoting Resilience and the Conservation of Plant Genetic Resources* (26-31), Routledge, London, 2013, p. 26.
[479] *Ibidem*.
[480] EBI (2012), p. 9.

contexts. The choice of which crops to grow depends, *inter alia*, on the climate conditions. Diverse climatic conditions call for diverse farming practices. These can be grouped in three major agricultural systems.[481] First, there is the highland mixed farming system where both crop production and livestock production are essential. The crop production is diverse and the genetic diversity of the crops is very high as most of them are farmers' varieties. Animals are used as labor forces and their products are used as fuel, food and manure for soil fertility. Secondly, there is the mixed farming system in the intermediate highlands, mountain foothills and upper valleys. Both crop and livestock production are important in this system, but the diversity of crops grown and the integration of crop and livestock production is smaller. Cereals such as tef, wheat, sorghum and maize dominate the crop production. Thirdly, there is the pastoral livestock production system of the arid and semi-arid zones. In such zones livestock production dominates, with camels, goats and cattle as important components. These zones are often too dry for crop production. Irrigated agriculture could be a solution, however, Ethiopia is dependent on rainfall for its agriculture as irrigation only covers a very limited amount of agricultural areas.[482] The choice of which crops to grow also depends on the cultural significance attributed to some crops. Some cultivated and wild species of PGRFA are used for social gatherings and religious events. Farmers continue to produce farmers' varieties of crops because of their contribution to food security, but also because of their cultural values.[483]

Ethiopia is home to an immense diversity of major crops, minor and under-utilized crops as well as a diversity of wild food plants, which are grown all over Ethiopia. The Ethiopian agricultural crop production is highly dominated by cereals, which cover ¾ of the total cultivated area. This makes them crucial for Ethiopia's economy and food security as they are part of many household's diets. The five major cereals are respectively tef, maize, wheat, sorghum and barley.[484]

Chapter 2. Implementation of the Treaty in Ethiopia

[481] EBI (2012), p. 15-17.
[482] EBI (2012), p. 14.
[483] EBI (2012), p. 97.
[484] EBI (2012), p. 24.

Ethiopia is a Contracting Party of the Treaty, it ratified the Treaty by Proclamation No. 330/2003 in April 2003.[485] To recall, the Governing Body of the Treaty adopted Resolution 2/2011 at its Fourth Session.[486] Pursuant Section V.1 of this Resolution each Contracting Party has to submit a report to the Compliance Committee on the measures it has taken to implement its obligations under the Treaty. At its Fifth Session the Governing Body approved the Standard Reporting Format in order to facilitate reporting and monitoring of the implementation of the Treaty.[487] The use of this standard format is voluntary. In November 2018 the Ethiopian Biodiversity Institute (EBI), Ethiopia's focal institution for the implementation of the Treaty, submitted Ethiopia's first country report on the implementation of the Treaty, using the Standard Reporting Format.[488]

EBI was established through Regulation No. 291/2013.[489] According to Article 5 of this Regulation the objective of EBI is to "ensure that the country's biodiversity and the associated community knowledge are properly conserved and sustainably utilized, and the country and its communities get fair and equitable share of the benefits arising out of their use". EBI replaces its precedent, the Institute of Biodiversity Conservation and Research established in 1998, which in its turn replaced the Plant Genetic Resources Center Ethiopia founded in 1976.

2.1 Conservation and sustainable use activities

Ethiopia has made significant achievements in the conservation and sustainable use of PGRFA. Since EBI was established in 1976, systematic PGRFA exploration, collection and conservation activities have been undertaken in Ethiopia.

2.1.1 Surveys and inventories

[485] Federal Democratic Republic of Ethiopia, *The International Treaty on Plant Genetic Resources for Food and Agriculture Ratification Proclamation No. 330/3003,* Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia, 9th Year No. 50, Addis Ababa, 29 April 2003, p. 2160-2161.
[486] Governing Body, Resolution 2/2011*, Procedures and operational mechanisms to promote compliance and address issues of non-compliance*, Fourth Session of the Governing Body of the ITPGRFA, Bali, Indonesia, 14-18 March 2011.
[487] Annex II "Standard Reporting Format" in Governing Body, Resolution 9/2013 Rev.1, *Procedures and operational mechanisms to promote compliance and address issues of non-compliance*, Fifth Session of the Governing Body of the ITPGRFA, Muscat, Oman, 24-28 September 2013.
[488] Ethiopian Biodiversity Institute (EBI), *Country Report on the Implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture: Ethiopia*, Ethiopia, November 2018. Hereafter: EBI (2018).
[489] Council of Ministers, *Ethiopian Biodiversity Institute Establishment Regulation 291/2013*, Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia, 19th Year No. 57, Addis Ababa, 24 July 2013, p. 6976-6981.

Regular surveys and inventories are important to monitor the conservation status of PGRFA and to develop adequate conservation strategies. Article 5.1(a) of the Treaty puts on Contracting Parties the obligation to survey and inventory PGRFA. Ethiopia's report on the implementation of the Treaty indicates that the EBI has conducted plant genetic inventories and surveys to gather and document information on the types and distribution of farmers' landraces, forest and aquatic resources and medicinal plants. This has made it possible to identify twenty areas of rich biological diversity, distributed across six regional states.[490]

When researching information about Ethiopia, quite a lot of information was available about the crop diversity in Ethiopia, collected through surveys and inventories. To give an example, in 2010 a major inventory of the Ethiopia's National Gene Bank accessions was carried out.[491] However, the implementation report emphasizes the fact that there is a need to conduct a detailed survey, inventory and documentation of major crop species.[492] Moreover, the country's report on the state of PGRFA indicates that survey and inventory is rarely conducted in Ethiopia because of the lack of financial resources and skilled manpower, as well as poor institutional capacities. When surveys and inventories are conducted, it is in an uncoordinated manner.[493]

2.1.2 Threats to crop diversity

Article 5.1(a) of the Treaty requires Contracting Parties to assess if there are any threats to the PGRFA in their countries. Although Ethiopia is a very rich country resource wise, Ethiopia's implementation report states that multiple threats to PGRFA have been identified in Ethiopia. This is very problematic as Ethiopia is the sole gene pool for globally important crops such as Arabica coffee and the center of diversity of many more.[494] The report states as factors affecting the state of crop diversity the expansion of modern farming practices which rely on improved genetically uniform crops, climate change (recurrent drought), diseases and pests as well as poor law enforcement on policies and strategies. For instance, local farmers' varieties are very important for Ethiopian agriculture, but implementers focus on improved varieties as these have higher market prices.[495]

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[490] EBI (2018), p. 6; Ethiopian Biodiversity Institute (EBI), *Ethiopia: Second Country Report on the State of PGRFA to FAO*, Addis Ababa, August 2007, p. 15. Hereafter: EBI (2007).
[491] EBI (2012), p. 69.
[492] EBI (2018), p. 5.
[493] EBI (2007), p. 16; EBI (2012), p. 58.
[494] EBI (2012), p. 10.
[495] EBI (2018), p. 6.

The local farmers' varieties are increasingly being replaced by improved varieties as they are often higher yielding. For instance, the tef improved variety is replacing tef farmers' varieties in many parts of the country. This causes a reduction in the total number of varieties and also , reduces the genetic distance between these varieties because the improved crop varieties are genetically more uniform.[496] Moreover, farmers tend to grow crops which demand less use of external inputs like fertilizers as these have become more expensive. This also causes the displacement of local varieties. For instance, pulse crops like chickpea have replaced crops like wheat in the highlands of the country.[497]

As stated in the implementation report, pests and diseases are also an important factor resulting in diversity loss. For instance, in 2010 improved varieties of bread wheat were affected by rust, resulting in high crop losses. Due to the repeated occurrence of rust, farmers decrease bread wheat production.[498]

Climate change is also an important cause of diversity loss in Ethiopia. In Ethiopia, recurrent drought and the a shift in the rain seasons are the main alarming consequences of climate change. Crops which are adapted to a particular agro-ecology encounter difficulties to perform well in the new environment.[499]

Stakeholders working on PGRFA have, in addition to the factors mentioned in the implementation report, also identified some other major factors affecting the state diversity in Ethiopia. For instance, the market strongly influences which crops are being grown. For instance, pulse crops, specifically lentil and chickpea, are highly demanded for both domestic consumption and export, which is why their production has been increased. Unfortunately, market-oriented and cash crop production has resulted in the loss of farmers' varieties. Farmers tend to grow crops for which there is a high market demand and for which the market prices are higher, at the expense of other crops. The crops for which the market prices are higher are often improved crop varieties as these are higher yielding, causing them to replace farmers' varieties.[500] Moreover, the huge international demand for coffee has caused the expansion of coffee plantations, at the expense of Ethiopia's natural forests. The forests themselves are under

[496] EBI (2012), p. 54-55.
[497] EBI (2012), p. 54.
[498] EBI (2012), p. 55.
[499] EBI (2012), p. 56.
[500] EBI (2012), p. 54-55.

threat because of deforestation.[501] Another factor affecting the crop diversity is the population pressure. Ethiopia is one of the fastest growing countries in the world with a growth rate of 3,02% per year. It has recently passed the bar of 115 million inhabitants, with a density of 115 per km2.[502] The Ethiopian highlands cover 37% of the total area of Ethiopia and are home to about 77% of the Ethiopian population, making them densely populated. This results in over-grazing, decreased agricultural productivity and severe degradation of natural resources.[503] There are many other causes of diversity loss, such as deforestation, invasive alien species, man-made conflicts etc.

Article 5.1(b) requires Contracting Parties to promote the collection of PGRFA that are under threat or are of potential use. Since the 1970s, with the creation of the precedent of EBI, the Ethiopian government has been trying to counter the threats to biodiversity loss.[504] As we will see in the following sections, EBI balances both *ex situ* and *in situ* conservation and, according to the implementation report, has the basic facilities necessary for the collection, conservation, distribution and documentation of PGRFA.[505] The collection priorities are based on diverse factors, among which the degree of threats.[506]

2.1.3 In situ conservation

To recall, *in situ* conservation of PGRFA comprises on-farm conservation and conservation in and outside protected areas.

Article 5.1(c) of the Treaty calls for Contracting Parties to promote or support farmers' and local communities' efforts to manage and conserve on-farm their PGRFA. On-farm conservation in Ethiopia is mainly implemented through the cultivation of the PGRFA, accordingly to the "conservation through use" principle.[507] The implementation report indicates that measures have been taken to promote and support farmers and local communities' efforts to maintain crop diversity and produce food. Around 30 Community Seed Banks (CSBs) and

[501] F. HESSELDEN, *Ethiopia's vulnerable tropical forests are key to securing future of wild coffee*, The Conservation, 23 March 2016, available at: <https://theconversation.com/ethiopias-vulnerable-tropical-forests-are-key-to-securing-future-of-wild-coffee-56516> (accessed on 5 August 2020).
[502] This information is available on: <https://worldpopulationreview.com/countries/ethiopia-population> (accessed 5 August 2020).
[503] EBI (2012), p. 14.
[504] R. FEYISSA, G. GEZU, B. TSEGAYE and T. DESALEGN, *op. cit*., p. 26.
[505] EBI (2018), p. 6.
[506] EBI (2012), p. 10.
[507] EBI (2012), p. 11.

24 Crop Conservation Associations have been established in different regional states of the country.[508] EBI plays an important role in promoting on-farm management in Ethiopia, for instance, EBI provides technical support to the CSBs.[509]

Ethiopia has an important community seed bank system. CSBs "store and manage seeds that aim to provide community members with seeds to use. Seeds are obtained from the farmers in the community and are selected and stored depending on the agreed storage system. CSBs can take different forms, for example, seeds can be stored in pots in a shed or community buildings, or in clay pots on the floor, in a family granary or on the kitchen shelf".[510] CBSs thus function as a source of seeds for farmers in order to increase their access to a diversity of crops and decrease seed shortage at planting. The stored seeds are also used to restore farmers' varieties lost due different factors. [511]

Article 5(d) requires the Contracting Parties to promote *in situ* conservation of wild food plants and WCR. To the question if *in situ* conservation of WCR and wild food plants has been promoted by EBI, the implementation report simply answers "no".[512] However, this is a bit odd considering that Ethiopia's protected areas, comprising national/regional parks, wildlife sanctuaries and reserves, forest priority areas and controlled hunting areas, cover approximately 14% of the country.[513] This is a lot compared to other countries. However, except one, none of them are devoted to wild PGRFA (CWR and wild food plants) as they were mostly established to preserve particular ecosystems, exceptional scenery or habitats for charismatic wildlife. This doesn't prevent them from being considered as *in situ* conservation sites for wild PGRFA as they harbor an enormous diversity of plant species, including CWR and wild plant foods.[514]

The conservation of wild PGRFA found outside of protected areas, such as in forests, grasslands, roadsides, recreation areas etc. not designated as protected areas, is mainly achieved by the surrounding communities. The yards of sacred places such as churches, monasteries,

[508] EBI (2018), p. 6.
[509] R. FEYISSA, G. GEZU, B. TSEGAYE and T. DESALEGN, *op. cit*., p. 27; EBI (2012), p. 65.
[510] FAO, *Community Seed Banks*, Junior Farmer Field and Life School- Facilitator's guide, Rome, 2014, p. 5
[511] EBI (2012), p. 65.
[512] EBI (2018), p. 6.
[513] EBI (2012), p. 67.
[514] EBI (2012), p. 66.

mosques, graveyards etc. are also home to a broad diversity of indigenous wild PGRFA and can also be considered as *in situ* conservation sites outside protected areas.[515]

2.1.4 Ex situ conservation

To the question if Ethiopia has promoted the development of an efficient and sustainable system of *ex situ* conservation of PGRFA in its country, EBI answered yes and specified that it established five cold rooms and five field gene banks.[516]

Ethiopia's National Gene Bank, maintained by EBI, was established in 1976. The size of this gene bank has been increasing for years now, becoming Africa's largest gene bank.[517] In the 2018 implementation report EBI indicated that the gene bank holds 81.805 accessions.[518] As of June 2019, the gene bank held 86.599 accessions of well over 500 plant species collected from all over the country. Of these accessions, 79.354 are conserved in five cold rooms. The remaining 7245 accessions are held in five field gene banks, established in different agro-ecological zones of the country.[519] The field gene banks are meant to conserve vegetatively propagated species and species with recalcitrant types of seed. They mainly hold coffee accessions, but root and tuber crops, herbs, spices, forage species and medicinal plants are held as well.[520]

Agricultural research centers and universities in Ethiopia also hold smaller collections of PGRFA.[521] The International Livestock Research Institute (ILRI), an IARC based in Kenya, has a gene bank in Addis Ababa holding more than 20.000 accessions from over 1000 forage species. It's contains one of the world's largest collections of forage grasses, legumes and fodder tree species.[522]

To the question if the maintenance of the viability, degree of variation, and the genetic integrity of *ex situ* collections of PGRFA have been monitored in Ethiopia, pursuant Article 5.1(f), EBI

[515] EBI (2012), p. 67.
[516] EBI (2018), p 7.
[517]< www.ebi.gov.et/about-us/departments/crop-genetic-resources/>(accessed 2 August 2020).
[518] EBI (2018), p 7.
[519] T. H. MULESA and O. T. WESTENGEN, *Against the grain? A historical institutional analysis of access governance of plant genetic resources for food and agriculture in Ethiopia*, The Journal of World Intellectual Property No. 23 (p. 82-120), Wiley, 2020, p. 87.
[520] T. H. MULESA and O. T. WESTENGEN, *op. cit.,* p. 87; EBI (2012), p. 70.
[521] EBI (2012), p. 69.
[522] <https://www.ilri.org/research/facilities/ilri-genebank> (accessed 6 August 2020).

answered positive. EBI says that it uses the International Genebank Standards to manage the National Gene Bank and regularly monitors the Gene Bank to test viability.[523] The viability of conserved accessions is monitored every 5 to 10 years. If the viability is less than 85%, rejuvenation is practiced. Suitable regeneration environments are selected, appropriate sample strategies and isolation distances are used, and the regenerated materials are properly handled. As for 2012, 5606 accessions had been regenerated and 3089 accessions were in need of immediate regeneration.[524]

Over the years, EBI has cooperated with a number of international organizations and programs in the conservation, exploration, collection, characterization, evaluation and documentation of PGRFA. To name a few, Bioversity International, Global Environment Facility (GEF), Community Biodiversity Development and Conservation Programme, the Seeds of Survival Programme of the Unitarian Service Committee of Canada etc.[525]

2.1.5 Sustainable use of PGRFA

To the question if there are any measures in place in Ethiopia to promote the sustainable use of PGRFA, EBI answers affirmatively.[526] Ethiopia has promoted an integrated approach to the exploration, conservation and sustainable use of PGRFA.[527] For instance, participatory plant breeding researches are being conducted with international organizations such as Biodiversity International. Recently, Bioversity International launched a project called "Improving Dietary Quality and Livelihoods using Farm and Wild Biodiversity through an Integrated Community-Based Approach in Ethiopia and Kenya." This project aims to empower communities in some regions in Ethiopia and Kenya to better use agrobiodiversity to increase farm resilience and incomes as well as improve dietary diversity.[528] The Government of Ethiopia has also adopted the project called "Sustainable Development of the Protected Area System in Ethiopia". The aim of the project is to support the government in effectively safeguarding Ethiopia's biodiversity, ecosystems and ecological processes from human-induced pressures and to represent them in a sustainable protected area system that is contributing to economic

[523] FAO, *International Genebank Standards for Plant Genetic Resources for Food and Agriculture*, 2014, 166; EBI (2018), p. 8.
[524] EBI (2012), p. 72-73.
[525] R. FEYISSA, G. GEZU, B. TSEGAYE and T. DESALEGN, *op. cit*., p. 26.
[526] EBI (2018), p. 8.
[527] EBI (2018), p. 4.
[528]<www.bioversityinternational.org/news/detail/empowering-communities-to-use-agrobiodiversity-for-nutritious-diets/ > (accessed 10 August 2020).

development.[529] Another example is a project called "Mainstreaming Agro-biodiversity Conservation into the Farming Systems of Ethiopia", funded by the GEF, provided farming communities with incentives (policies, capacities, markets and knowledge) to mainstream the conservation of agro-biodiversity in their farming systems.[530]

2.2 Farmers' Rights

In the second part of the research the crucial role of farmers in the conservation, improvement and sustainable use of a diversity of PGRFA, which today serve as a source of food and agriculture, was established. This is even more true in Ethiopia were over 85% of the population depends on small-scale agriculture for their livelihood, the economy depends on agriculture and 95% of the cultivated area is cropped with farmers' varieties.[531] Most of the country's PGRFA diversity is produced, conserved and improved by small holder farmers and traditional farmers' practices, such as seed and traditional knowledge exchange, are essential therein.[532] It is thus very important to promote farmers' rights in order to encourage and support the farming communities of Ethiopia to continue to use and exchange seed and traditional knowledge. Ethiopia has played an important role in the negotiation process related to farmers' rights and has been one of the first countries to protect and promote community and farmers' rights in Africa, accordingly to Article 9 of the Treaty.[533] In the implementation report four policy frameworks to protect and promote farmers' rights in Ethiopia are cited.[534] This is in accordance with Article 4 of the Treaty, which requires each Contracting Party to ensure conformity of its laws, regulations and procedures with its obligations under the Treaty. It is interesting to note that Ethiopia is neither a member of the UPOV Convention or the WTO TRIPS Agreement.

The first legal instrument referred to in the implementation report is the Plant Breeders' Right Proclamation No.481/2006 which was adopted by Ethiopia in 2006.[535] However, this

[529]<www.et.undp.org/content/ethiopia/en/home/operations/projects/climateriskandresilience/project_ProtectedArea.html> (accessed 10 August 2020).
[530] www.thegef.org/project/mainstreaming-agro-biodiversity-conservation-farming-systems-ethiopia (accessed on 10 August 2020).
[531] EBI (2012), p. 14.
[532] R. FEYISSA, *Farmers' Rights in Ethiopia: A Case Study*, Background Study 5, The Farmers' Rights Project, The Fridtjof Nansen Insitute Report 7/2006, May 2006, v.
[533] R. FEYISSA, *op. cit.,* p. 4.
[534] EBI (2018), p. 12.
[535] Federal Democratic Republic of Ethiopia, *Plant Breeders' Right Proclamation No.481/2006,* Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia, 12th Year No. 12, Addis Ababa, 27 February 2006, p. 3339-3352.

Proclamation has been repealed by the Plant Breeders' Right Proclamation No. 1068/2017, after the implementation report was submitted to the Governing Body of the Treaty.[536] The Proclamation is aimed at boosting the economic contribution of plant breeders and the development of new varieties by guaranteeing plant breeder's rights.[537] The Proclamation, in its Preamble, recognizes the necessity to maintain the centuries old customary knowledge and practice of saving, using and exchanging seed by farmers and pastoral communities of Ethiopia and their past, present and future contributions in conserving agro-biodiversity resources used to develop new plant varieties. There are also substantive provisions addressing farmers' rights.

Article 7 of the Proclamation establishes the rights of farmers or pastoral communities on protected varieties. Article 7.1 states that small holder farmers or pastoral communities have the right to save, use, exchange and sell farm-saved seed of any variety on the non-commercial marketing. The protection of farmers' rights under this provision is quite restrictive and exclusionist as there are two important requirements for a person to be able to exercise these rights. Firstly, only small holder farmers or pastoral communities can claim farmers' rights under this Article. A small holder farmer or pastoral community is defined in Article 2.15 as "a farmer or pastoral community who is officially granted a certificate of possession of land not more than 10 hectares and engaged in agricultural development using predominantly his own and family labor and his lively hood is predominately dependent on agriculture". These are quite a lot of conditions to meet. For instance, an individual who uses hired labor may not be able to claim farmers' rights under the Proclamation.[538] Secondly, the right to sell a farm-saved seed is limited to non-commercial transactions. Commercial marketing is defined in Article 2.4 as "any trade in seed other than the marketing that is conducted between small holder farmers or pastoral communities, or between small holder farmers; pastoral communities and their cooperative societies". For instance, the sale of farm-saved seed to a consumer in a market constitutes commercial marketing and the farmer could thus be suited for the infringement of plant breeders' rights.[539] Article 7.2 of the Proclamation states that any farmer or pastoral community shall also have the right to save and use farm-saved seed of any variety of food crops and other species that directly support his livelihoods.

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[536] Federal Democratic Republic of Ethiopia, *Plant Breeders' Right Proclamation No. 1068/2017,* Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia, 24th Year No. 29, Addis Ababa, 1 March 2018, p. 10281-10302.
[537] M. NURE GOBENA and D. SURYA PRAKASA RAO, *A Comparative Analysis of Farmers' Rights under Ethiopian and Indian Law*, International Journal of Science and Research, Vol. 8 Issue 2, February 2019, p. 1357.
[538] M. NURE GOBENA and D. SURYA PRAKASA RAO, *op. cit*., p. 1357.
[539] M. NURE GOBENA and D. SURYA PRAKASA RAO, *op. cit*., p. 1358.

Article 11.1 of the Proclamation states that any plant breeder, whether he is an Ethiopian or a foreign national, or resident in Ethiopia or elsewhere, may apply for a plant breeder's right in respect of a new plant variety that is either bred locally or abroad. Article 11.2 says that in case of farmers or pastoral communities' varieties the application shall be made by a person representing the community that developed the variety, in order for the community to obtain plant breeder's right. An individual farmer who has developed a new variety can thus not obtain plant breeders' rights.[540] Article 2.7 defines farmers or pastoral communities variety as a variety "traditionally cultivated and developed by farmers or pastoral communities in their fields, or predominantly breed or selected by farmers or pastoral communities from various plant sources".

The Proclamation doesn't provide sufficient guarantees to the protection of farmers' rights. The broad promise regarding the protection of farmers' rights implied in the wordings of the Preamble isn't realized in the substantive provisions of the Proclamation which are restrictive. The farmers' rights aren't given as much attention as the plant breeders' rights.[541] For instance, it doesn't provide the right of farmers to claim compensation in case of failure of protected plant varieties to meet the expected performance. There is also no provision that protects farmers against a suit for an innocent infringement.[542]

The implementation reports also refers to the Genetic Resources and Community Knowledge and Community Rights Proclamation No. 482/2006[543] as well as its Regulation No. 169/2009.[544] The objective of this Proclamation is to ensure that the country and its communities obtain fair and equitable share from the benefits arising out of the use of genetic resources so as to promote the conservation and sustainable utilization of the country's genetic resources.[545] In its Preamble the Proclamation recognizes the contribution of Ethiopian communities to the conservation, development and sustainable use of genetic resources. Therefore the Preamble states that it is necessary to protect and encourage the customary use

[540] M. NURE GOBENA and D. SURYA PRAKASA RAO, *op. cit*., p. 1357.
[541] M. NURE GOBENA and D. SURYA PRAKASA RAO, *op. cit*., p. 1358.
[542] *Ibidem.*
[543] Federal Democratic Republic of Ethiopia, *Access to Genetic Resources and Community Knowledge and Community Rights Proclamation No. 482/2006*, Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia 13th Year No. 13, Addis Ababa, 27 February 2006, p. 3353-3373 (hereafter: Proclamation 482/2006).
[544] Council of Ministers, *Access to Genetic Resources and Community Knowledge and Community Rights*, Federal Negarit Gazeta of the Federal Democratic Republic of Ethiopia, 15th Year No. 67, Addis Ababa, 9 November 2009, p. 5071-5088.
[545] Proclamation 482/2006, Article 3.

of genetic resources by Ethiopian communities and to recognize and protect their knowledge regarding the conservation and use of these resources. It is also necessary to involve the communities in the decision-making concerning the use of genetic resources and community knowledge and to share the benefits derived from the use of their knowledge and resources. Article 6 of the Proclamation states that local communities shall have the following rights over their genetic resources and community knowledge: the right to regulate access to their community knowledge, the inalienable right to use their genetic resources and community knowledge and the right to share from the benefit arising out of the utilization of their genetic resources and community knowledge.

Lastly, the implementation report refers to the Ethiopian National Policy on Biodiversity Conservation and Research (1998), which as adopted by the Institute of Biodiversity Conservation and Research, now re-established as the EBI. Its overall objective is to ensure sustainable conservation and management of Ethiopia's plant, animal, microbial genetic resources and ecosystems. This Policy emphasizes community participation in decision making on biodiversity conservation, development and utilization and the sharing of the benefits accrued as a result of the use of indigenous knowledge and germplasm. It also emphasizes the creation of community-based systems that recognize community rights to biodiversity resource ownership and use and the fostering of indigenous knowledge and methods.[546]

2.3 Access and Benefit-sharing

How has Ethiopia implemented the MLS?

2.3.1 Coverage of the Multilateral System

To the question if Ethiopia has included in the MLS all PGRFA listed in Annex I to the Treaty under its management and control and in the public domain, in accordance with Article 11.2, the report states that only a limited number of crops were included, such as wheat and maize. The report also states that no difficulties have been encountered in including the Annex I PGRFA in the MLS, but that the varieties of the listed species (64) need to be specified by

[546] R. FEYISSA, *op. cit.,* p. 6.

scientific method.[547] As of January 2019, 52.657 materials from Ethiopia were available in the MLS.[548]

Pursuant Article 11.3 Contracting Parties have to take measures to encourage natural and legal persons within their jurisdiction who hold Annex I PGRFA to include those resources in the MLS. The report indicates that it has been difficult to encourage these persons to include their PGRFA in the Multilateral System because most of them are private seed companies who are not open and willing to disclose, let alone include, the PGRFA they are holding. However, the report does cite two legal persons within the jurisdiction of Ethiopia who have included their resources: EBI and ILRI.[549]

2.3.2 Facilitated access

To recall, Article 12.2 of the Treaty requires Contracting Parties to take measures to provide facilitated access through the MLS. Article 12.4 says that such facilitated access shall be provided pursuant the SMTA.

The implementation report states that Ethiopia has taken legal measures to provide facilitated access to Annex I PGRFA in accordance with the conditions set out in Article 12.4 of the Treaty.[550] Article 15.2 of the Proclamation No. 482/2006 states that "access to genetic resources under a multilateral system of access to which Ethiopia is a party shall be made in accordance with the conditions and procedure specified thereof." In other words, Ethiopia has to provide access to PGRFA under the MLS of the Treaty according to the conditions and procedures of the MLS, which pursuant to Article 12.4, are set out in the SMTA.[551] The PGRFA under the MLS of the Treaty are thus exempt from the general rules of access and benefit-sharing of the Proclamation. Article 15.2 of the Proclamation No. 482/2006 also says that the conditions and procedure in accordance with which access to genetic resources under multilateral systems shall be implemented shall be determined by regulations. Regulation No. 169/2009 sets out the procedure and conditions under which access to genetic resources in accordance with the conditions and procedures of the SMTA shall be granted. Article 14 of the Regulation says that

[547] EBI (2018), p. 12.
[548] Annex II in: Treaty Secretary, *Report on the Implementation and Operations of the Multilateral System*, Eight Session of the Governing Body of the ITPGRFA, Doc. IT/GB-8/19/8.1 Rev.1, Rome, Italy, 11-16 November 2019.
[549] EBI (2018), p. 13.
[550] EBI (2018), p. 13.
[551] FAO (2010), p. 172.

access to genetic resources in accordance with the MLS shall only be granted if the PGRFA requested are listed in Annex I of the Treaty and if their use is solely for the purpose of utilization and conservation for research, breeding and training for food and agriculture. Moreover, the access applicant has to be a citizen of a country that is party to the Treaty and the requested PGRFA have to be under the *ex situ* or *in situ* management and control of the Ethiopian government organs or the possessor thereof has consented to conducting of the MLS. Article 16 says that if these conditions are met, then access to the PGRFA shall be granted.

The report states that facilitated access has been provided by EBI to annex I PGRFA pursuant to the SMTA five times. The report states that the SMTA has been used voluntarily five times in Ethiopia to provide access to non-Annex I PGRFA.[552] The number of SMTAs were Ethiopia was provider is 874 and 11.840 samples have been provided. The number of SMTAs were Ethiopia was receiver is 1493 and almost 100.000 samples have been received.[553]

Article 12.5 requires Contracting Parties to provide an opportunity for parties to a MTA to seek recourse under their legal systems in case of contractual disputes arising under such agreements. The report indicates that Ethiopia has provided for this in Article 20 of the 169/2009 Regulation. Pursuant to Article 20, claims arising with regard to the implementation of SMTA may be presented to the Federal High Court of Ethiopia. Articles 456-461 of the 1965 Civil Procedure Code of Ethiopia also provides for the enforcement of arbitral decisions related to disputes arising under the SMTA.

Accordingly to Article 15.2 of the Treaty, EBI has given facilitated access to all Annex I PGRFA to ILRI, Bioversity International and the International Maize and Wheat Improvement Center (CIMMYIT).[554] To the question if access to non-Annex I PGRFA has been provided in Ethiopia to IARCs or other international institutions that have signed agreements with the Governing Body of the Treaty, IBE answered no because no requests were made.

2.3.3 Benefit sharing

The implementation report indicates that Ethiopia has not made any information available regarding Annex I PGRFA. The report also indicates that Ethiopia has not provided or

[552] EBI (2018), p. 14.
[553] <https://mls.planttreaty.org/itt/index.php?r=stats/pubMaps&mapType=smtaRec> (accessed 9 August 2020).
[554] EBI (2018), p. 13.

facilitated access to technologies for the conservation, characterization, evaluation and use of Annex I PGRFA.[555] To recall, Article 13.2(a) and (b) hold the wordings "in accordance with national capabilities". Ethiopia is a very poor country, which might explain this lack of benefit-sharing.

To the question if Ethiopia has provided for and/or benefitted from capacity building measures in respect of Annex I PGRFA, EBI answers affirmative. Such measures were related to establishing and strengthening programs for scientific and technical education and training in conservation and sustainable use of PGRFA as well as developing and strengthening facilities for conservation and sustainable use of PGRFA. Capacity building trainings were provided on GLIS and its associated technologies.[556]

2.4 Financial resources

To the question if Ethiopia has provided and/or received financial resources for the implementation of the Treaty through bilateral, regional or multilateral channels, the implementation report answers negatively. To the question if Ethiopia has provided financial resources for national activities for the conservation and sustainable use of PGRFA, the answer is yes.[557] Article 9 of Regulation 291/2013, through which EBI was established, says that EBI shall receive an annual budget from the government in order to execute its objectives. However, the implementation report says that this budget is limited in amount.

[555] EBI (2018), p. 16.
[556] EBI (2018), p. 17.
[557] EBI (2018), 19-20.

CONCLUSION

From the first part of the research, we can conclude that PGRFA are of immense importance for the future of food security. Not only are they important to produce crops, but also to produce a diversity of crops and to produce crops which are adapted to the environmental changes due to climate change. It is no wonder that the Treaty currently counts 147 Contracting Parties, it is our actual future that is at stake. However, it is confronting to realize that all of the causes behind biodiversity loss, are the result of human action.

From the second part of the research, we can remember that the Treaty establishes a cooperative multilateral framework. Its three objectives, the conservation and sustainable use of PGRFA and the sharing of benefits arising out of their use, can only be achieved if all Contracting Parties work together, in the interest of the international community. It is very refreshing to see countries making an effort to deal in a respectful and sustainable manner with our most valuable natural resources. The Treaty is innovative in a lot of ways. First of all, it is the first ever binding agreement specifically dealing with PGRFA, which is already a victory in itself. It is also the first international legal instrument to recognize the enormous contributions of farmers to the development, improvement and conservation of our crops. The Treaty is also the pioneer in establishing a global gene pool with the world's major crops, freely accessible to all Contracting Parties. The Multilateral System of the Treaty is a win-win situation for all.

In the introduction the following question was asked: "Can the International Treaty on Plant Genetic Resources for Food and Agriculture, through its binding measures and mechanisms regarding the access to PGRFA and their conservation and sustainable use, provide for an effective response to the growing food insecurity?". Absolutely. It is impossible to say that the Treaty is not successful considering the fact that more than 5.4 million samples have been distributed under approximately 75.000 SMTAs. This being only one of its achievements. In implementing the Treaty, stakeholders have adopted conservation and sustainable use measures, recognized farmers' rights, shared many know-how and techniques, developed crops adapted to the changing environment, incentivized farmers to maintain diversity, and the list goes on. I think the strongest feature of the Treaty is that it unites so many stakeholders, from the biggest biotechnology companies to the smallest farmer in a village. The treaty manages to bring together, in one single framework, the interests of so many stakeholders active in the field

of PGRFA. If such a poor country like Ethiopia, dealing with grave food insecurity, achieves a quite correct implementation of the Treaty, other Contracting Parties have no excuse.

I must say, the Treaty also has its flaws. It is not easy to understand, and I guess, even harder to implement. The text of the Treaty contains a lot of ambiguities, especially in the provisions regarding the Multilateral System. Many aspects were not agreed upon during the negotiations and had to be established through the Governing Body afterwards. This has resulted in an enormous amount of documents and reports published by the FAO, the Governing Body, the Treaty Secretary and it subsidiary bodies, which can be quite overwhelming. However, such ambiguities are understandable, knowing that the Treaty touches upon a few sensitive subjects, such as farmers' rights, intellectual property rights and financial resources. Especially, Article 12.3(d), relating to intellectual property rights over resources in the Multilateral System, has been the subject of endless discussions, that it is almost as if they have agreed to disagree.

To end on a positive note, I am hopeful that this Treaty will continue to bring back good results and that, in a near future, food security will be achieved. Because, after all, that is the goal of the Treaty.

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