



The International Treaty
ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE



Introduction to the International Treaty on Plant Genetic Resources for Food and Agriculture





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Introduction to the International Treaty on Plant Genetic Resources for Food and Agriculture

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Foreword

Humanity is facing the interconnected challenges of food security, climate change and the loss of agricultural biodiversity. Over one billion people are suffering from chronic hunger and malnutrition. At the same time, world population continues to grow and climate change is causing new pressures on agriculture. World food production has to increase by 70 percent by 2050 to meet this increasing demand, while relying on a natural resource base that is about to reach its limits. Plant breeding will be essential to meet the food security challenge in the context of climate change. Crop varieties that achieve significantly higher yields and that are able to withstand new diseases and extreme weather events will have to be developed. For this, it is crucial to conserve the existing crop diversity, and to allow agricultural researchers, breeders and farmers access to it.

With the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”) the international community has created a powerful tool to tackle this triple challenge. The International Treaty provides national authorities with the legal framework to take action for the conservation and the sustainable use of their crop diversity. Moreover, it has established a mechanism that facilitates international exchanges of crop genetic material, and a fund that supports projects for the conservation and the sustainable use of crop diversity worldwide.

The translation of the provisions of the International Treaty into effective measures at the national level is fundamental for the International Treaty to live up to its full potential. The need for capacity building and training to that end has been voiced by a large number of Contracting Parties and various stakeholder groups. This educational module is one means by which the Secretariat seeks to strengthen capacities on the operation of the International Treaty.

This introduction module is the first in a series of a total of five educational modules. Its lessons are aimed at a broad target learner group, especially at learners that are new to the International Treaty. The subsequent modules (which are currently under development) will enter into detail about the main components of the International Treaty. Each of these modules will be built up by several self-contained lessons which are designed for specific target learner groups.

This module is the result of a participatory process involving a broad range of experts. A support group has provided guidance in shaping the outline of the different lessons through an electronic consultation process. Its lessons have been prepared by the Secretariat with the help of peer reviewers of different stakeholder groups. The lessons of the subsequent modules are being both written and reviewed by external experts, under the overall coordination of the Secretariat. The final series will include additional support material, including exercises and customizable presentations for trainers.

We are confident that these training materials will substantially contribute to the effective implementation of the International Treaty.



Shakeel Bhatti

Secretary

International Treaty on Plant Genetic Resources for Food and Agriculture

Overview

LESSON 1

A Global Treaty for Food Security in an Era of Climate Change

Page 1

This lesson exhibits the importance of the International Treaty as a policy vehicle to tackle some of the major global challenges humanity is currently facing: climate change, food security and the loss of crop diversity. It provides up-to-date overviews of trends and scenarios for all three challenges, and shows how the main components of the International Treaty contribute to cope with these.

LESSON 2

Objectives, Scope and Basic Concepts

Page 27

Lesson 2 is especially designed for learners that are completely new to the International Treaty. It lays down the basics of the International Treaty, including the main advantages of being a Contracting Party. The second part of the lesson provides a glossary of key terms and concepts. This glossary will be useful for the full comprehension of the learning module and the International Treaty, in particular to learners who do not have a technical background in the biodiversity policy area.

LESSON 3

History of the International Treaty

Page 57

For those learners that are interested in a little more background on the origins of the International Treaty, this lesson goes back to the middle of the 20th century. It presents the socio-economic factors that led to the adoption of a first instrument for the conservation and sustainable use of crop diversity in the early 1980s. The lesson then shows how negotiations on this instrument were reopened in the 1990s, in order to culminate after seven long years in the adoption of the International Treaty.

LESSON 4

Main Components and Governance of the International Treaty

Page 89

Lesson 4 provides learners with a solid knowledge base on the four main components of the International Treaty: (1) Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture, (2) Farmers' Rights, (3) the Multilateral System of Access and Benefit-sharing and (4) the Funding Strategy. The lesson thereby also provides the starting point for the subsequent modules of this series, each of which will be dedicated to the in-depth study of one of those main components.

LESSON 5

The Legal Architecture Governing Crop Diversity and Partnerships for Implementation

Page 123

This lesson illustrates the broader international legal framework within which the International Treaty operates. It introduces other international agreements of relevance to the policy area of crop diversity and the International Treaty that deal with conservation and sustainable use, access and benefit-sharing and intellectual property rights. The lesson also presents some of the major partnerships that the Governing Body of the International Treaty and its Secretariat maintain with other international institutions and bodies.

Acknowledgements

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We were able to set up and actively involve an external support group in the elaboration of the final outline of the module. Our special thanks go to these experts that have been part of this process over several months, providing us with very useful feedback. The members of the support group were Gerald Moore from Bioversity International, Regine Andersen from the Fridtjof Nansen Institute, Kirsty McLean from the United Nations University, Bert Visser from Wageningen University, Wilhelmina Pelegrina from Southeast Asia Regional Initiatives for Community Empowerment and Clair Hershey from the FAO Global Partnership Initiative for Plant Breeding Capacity Building.

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Patrick Mink from the Secretariat was the lead author and editor of the entire module.

Shakeel Bhatti, Secretary of the International Treaty, had the overall responsibility for this publication.

Acronyms and Abbreviations

ABS	Access and benefit-sharing
AGP	Plant Production and Protection Division (FAO)
Bonn Guidelines	Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
CGIAR Centres	International Agricultural Research Centres of the Consultative Group on International Agricultural Research
Code of Conduct	International Code of Conduct for Plant Germplasm Collecting and Transfer
Commission	Commission on Genetic Resources for Food and Agriculture (FAO; until 1995 “Commission on Plant Genetic Resources”)
Crop Trust	Global Crop Diversity Trust
CWR	Crop Wild Relatives
FAO	Food and Agriculture Organization of the United Nations
GIPB	Global Partnership Initiative for Plant Breeding Capacity Building
Global Plan of Action	Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture
Governing Body	Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture
IFAD	International Fund for Agricultural Development
International Treaty	International Treaty on Plant Genetic Resources for Food and Agriculture
International Undertaking	International Undertaking on Plant Genetic Resources
IPCC	Intergovernmental Panel on Climate Change
IPR	Intellectual Property Rights

Joint Programme	FAO/Bioversity International Joint Programme for Capacity Building
MAT	Mutually agreed terms
Multilateral System	Multilateral System of Access and Benefit-sharing (of the International Treaty on Plant Genetic Resources for Food and Agriculture)
Nagoya Protocol	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity
NordGen	Nordic Genetic Resource Centre
PBR	Plant Breeders' Right
PIC	Prior informed consent
PGRFA	Plant Genetic Resources for Food and Agriculture
Secretariat	Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture
SMTA	Standard Material Transfer Agreement
State of the World Report	Report on the State of the World's Plant Genetic Resources for Food and Agriculture
Strategic Plan	Strategic Plan for the Implementation of the Benefit-sharing Fund of the Funding Strategy
TRIPS Agreement	Agreement on Trade-Related Aspects of Intellectual Property Rights
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UPOV	International Union for the Protection of New Varieties of Plants
UPOV Convention	International Convention for the Protection of New Varieties of Plants
WIPO	World Intellectual Property Organization
WIPO IGC	WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore
WTO	World Trade Organization

A Global Treaty for Food Security in an Era of Climate Change



LESSON 1



Learning objectives

At the end of this lesson, the learner will:

- have an overview of the global challenges of crop diversity loss, food security and climate change;
- understand how these three challenges are interlinked;
- be familiar with the special nature of crop diversity compared to other components of biodiversity and understand why this calls for a special set of regulations; and
- know how the International Treaty addresses the triple challenge of crop diversity loss and food security in the context of climate change.



Target learner groups

Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Triticum durum, durum wheat, by Elizabeth Blackwell (1739)

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1.1. Overview of the Lesson

This lesson showcases the importance of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”) for coping with the global challenges of crop diversity loss, food security and climate change.

By laying down the importance of the conservation and the sustainable use of crop diversity to food security and therefore to human survival – all the more in the context of climate change – the lesson highlights how the three issues are closely interlinked. It will become clear that a multilateral policy solution is needed to counter these problems that threaten humanity as a whole.

The fact that climate change has far-reaching impacts on agriculture does not yet seem to be fully reflected in climate change discussions and negotiation forums. This lesson therefore focuses on the impacts of climate change on crop production, and on the crucial role of crop diversity for climate change adaptation in agriculture. It further shows how the International Treaty facilitates adaptation through its four main components:

- Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture;
- Farmers’ Rights;
- The Multilateral System of Access and Benefit-sharing; and
- The Funding Strategy.

The first part of the lesson provides an up-to-date overview of trends and scenarios of the three challenges. Building on that, the second part starts by presenting the rationale for a specific multilateral policy framework for crop diversity. The main components of the International Treaty will be introduced to highlight their importance for countering the loss of crop diversity and using it more effectively to achieve and maintain food security under the growing pressures of climate change.

After completion of this lesson the learner will be fully aware of the policy relevance of the International Treaty. He or she will also acquire a notion of the policy tools the International Treaty offers to cope with the global challenges of the 21st century. In addition, the brief overview of the International Treaty’s main components constitutes an introduction to lesson 4 of this module (Main Components and Governance of the International Treaty).



1.2. An Introduction to the Global Challenges of the 21st Century

1.2.1. Crop Diversity

Basic Facts

In the 1950s, plant breeders were the first to start using the term ‘genetic erosion’, indicating the gradual but serious loss of crop diversity. Interestingly enough, the emergence of the term coincided with the adoption of major changes in agricultural production systems globally to keep up with the growing world population. In the course of this process – which came to be commonly referred to as the ‘Green Revolution’ – many traditional crop varieties were replaced by modern improved varieties. In combination with industrial fertilizers and pesticides, these improved varieties brought about the significantly higher crop yields that were urgently needed at that time.

The replacement of traditional crop varieties by modern varieties was and remains one of the major factors affecting crop diversity in production systems.¹ Recent research confirms that genetic erosion did indeed take place at the time of the shift from traditional to more intensified production. In contrast to traditional farming systems where agricultural inputs were mainly produced by farmers, the modern production systems required farmers to purchase improved seeds, fertilizers and pesticides as external inputs. As a consequence, the practice of saving seed for subsequent cultivation was broadly abandoned and many locally adapted varieties were lost. In the decades that followed, other factors directly and indirectly linked to the Green Revolution further contributed to the loss of diversity between and within crops.



Courtesy Flickr/Nicholas T.

¹ FAO (2010), p. 44.



Such factors included the mechanization of production processes, the increasing corporate concentration in the seed industry, the opening of agricultural markets to international trade, uniformity requirements set by the food industry and a growing homogenization of food cultures worldwide.²

According to the Food and Agriculture Organization of the United Nations (FAO), more than 75 percent³ of global crop diversity has disappeared irrevocably over the 20th century!⁴ Some progress has been achieved over the last decade with regard to the conservation of samples of crop varieties in gene banks. The state of crop diversity in farmers' fields and in natural surroundings, however, is far less clear and remains a cause for concern for numerous crops in most countries. Notably, a large number of wild relatives of important food crops are likely to disappear over the next decades due to climate change.⁵

1.2.2. Food Security

Basic Facts

FAO member states define food security as achieved when all people, at all times, have access⁶ to sufficient food to meet their dietary needs and food preferences for an active and healthy life.⁷ A glimpse at the current reality is enough to understand that this goal is still far from being achieved and that food security remains a main challenge over the coming decades: out of a total world population of more than 6.8 billion today, over one billion people suffer already from chronic hunger and malnutrition. And the world population is projected to further grow to reach over 9 billion people by 2050. This population growth, coupled with other trends such as rising incomes in emerging countries and increasing urbanization, implies that global food production will have to grow by as much as 70 percent during the same period!⁸

Key points to remember:

- Genetic erosion describes the loss of genetic diversity – both the loss of specific traits within a variety, as well as the loss of entire varieties and species.
- More than 75 percent of global crop diversity has been lost irrevocably over the 20th century.
- Main factors that contributed to this genetic erosion include the following:
 - Replacement of locally adapted varieties by higher-yielding, more uniform varieties;
 - Shift from traditional to intensified production systems;
 - Seed became an external input in agricultural production;
 - Concentration of the global seed industry;
 - International trade in agricultural markets; and
 - Uniformity requirements of the food industry and homogenization of food cultures.

² Visser (2009), pp. 2-3.

³ FAO (2004).

⁴ In South Korea, for example, 74 percent of the most common crop varieties in 1985 had been replaced by 1993, and of the 10 000 wheat varieties in use in China in 1949, only 1000 were still being cultivated in the 1970s.

⁵ FAO (2010), chapter 1, pp. 3-22.

⁶ This includes physical, social and economic access, to food that is both safe and nutritious.

⁷ FAO (2009c), p. 1, footnote 1.

⁸ FAO (2009a), p. 2.





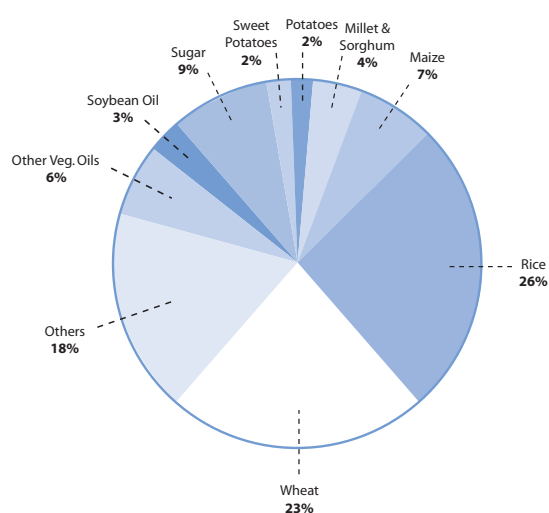
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The Importance of Crop Diversity for Plant Breeding and Food Security

Plant products account for the vast proportion of the world's food supply. Overall, 84 percent of human nutrition comes from plants. In Asia and the Pacific, the Near East and Africa plants provide around 90 percent

of the average human diet. In Latin America and the Caribbean the figure is about 80 percent, and in Europe and North America it tends towards 75 percent.⁹ However, humanity has become dangerously reliant on only a few different crops. Out of the 10 000 to 12 000 known edible plant spe-

Figure 1.1: Most Important Crops for Food Energy Supply



Source: The State of the World's Plant Genetic Resources for Food and Agriculture.¹⁰

⁹ Africa 93 percent, Asia and the Pacific 87 percent, Near East 88 percent, Europe 72.5 percent, Latin America and the Caribbean 81 percent, North America 73 percent. See footnote reference 10.

¹⁰ FAO (2001a).



cies, only 150 to 200 are used by humans and three of them alone – rice, maize and wheat – contribute nearly 60 percent of calories and proteins that humans obtain from plants.¹¹

Meeting the expected increase in food demand by 2050 will not be an easy undertaking. It requires annual cereal production to increase by one billion tons. About half of the average global yield increases for cereals that were achieved under the Green Revolution were attributable to plant breeding. The other half came from altered agricultural practices such as the use of fertilizers and pesticides, irrigation and expansion of cultivated areas. Since the natural resource base on which agriculture relies is finite and in some important respects even declining, these agricultural practices cannot be sustained over the long run. As oil, clean water and arable land become scarcer, their cost as agricultural inputs increases in both financial and environmental terms. This suggests that the role of crop diversity and plant breeding will become even more important in the near future for achieving food security in a sustainable way. Indeed, over 70 percent of the required production increases by 2050 will have to come from higher yields and less than 10 percent can

be expected from an expansion in arable land.¹²

Crop genetic resources contain the essential building blocks that are critical to food security. Their availability is a fundamental requirement for achieving further productivity increases and higher nutritional values through plant breeding.¹³

1.2.3. Climate Change

Basic Facts

At least since the release of the 4th Report of the Intergovernmental Panel on Climate Change (IPCC) it is globally accepted that climate change is an unequivocal fact. Its impacts are already perceptible today and will intensify over the current century. According to the IPCC, the global average temperature will rise between 1.8 and 4 degrees Celsius by the end of the century (compared to an increase of about 0.75 degrees Celsius over the past century). Global and regional weather conditions will become more variable, with more frequent extreme events, expansion of areas with high climate variability and significant changes in precipitation patterns.¹⁴

Key points to remember:

- Food security is achieved when all people, at all times, have physical, social and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.
- Today, over 1 billion people are undernourished (more than 1 person out of 7).
- Globally, 84 percent of the human diet comes from plants.
- To meet the food demand in 2050, global food production has to increase by 70 percent.
- Over 70 percent of this increase in food production will have to come from higher crop yields.
- Crop diversity is essential because agricultural crops and their wild relatives contain the building blocks for crop improvements through plant breeding.

¹¹ FAO (1997), p. 15.

¹² Hegwood (2009), p. 5.

¹³ FAO (2009a), p. 2.

¹⁴ IPCC (2007b), pp. 30-31, 43, 45, 54.





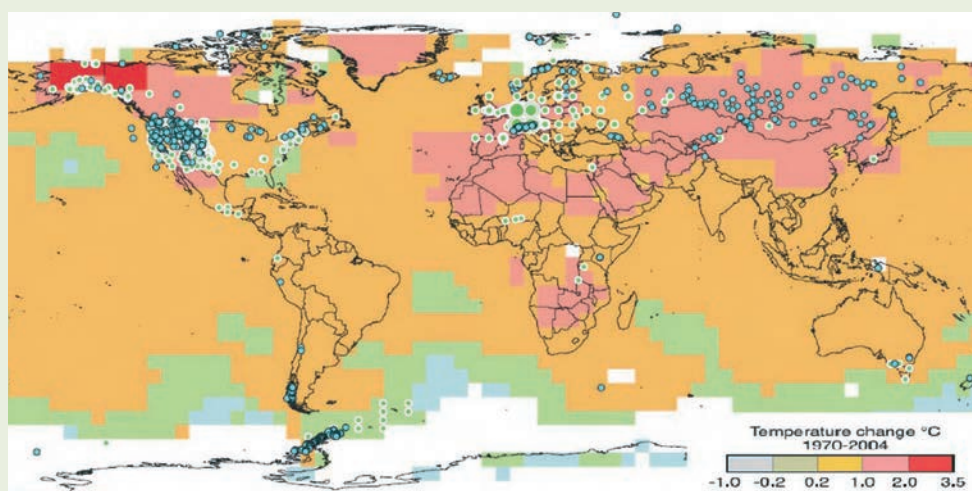
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Impacts on Crop Production

The impact of climate change on agriculture will vary from region to region.¹⁵ Generally, changes in precipitation and rising temperatures are likely to lead to increased incidence and intensity of weeds, pests and diseases in cultivated areas. Higher temperatures are expected to increase the length of the growing season and the total area suitable for cultivation in temperate latitudes,

especially in Europe and North America. However, possible yield gains in these regions have to be set against losses due to the spread of weeds, pests and diseases. Regions in lower latitudes will be most severely affected by a decline in land suitable for cultivation, especially sub-Saharan Africa and the Caribbean. In tropical and subtropical regions extreme seasonal heat is expected to severely lower agricultural outputs.¹⁶

Figure 1.2: Changes in Surface Temperatures 1970-2004



Source: Climate Change 2007 – Synthesis Report.¹⁷

¹⁵ see e.g. Lane and Jarvis (2007).

¹⁶ IPCC (2007a), chapter 5, pp. 273-313.

¹⁷ IPCC (2007b), p. 32.

Whatever the overall impact, one thing is clear: climate change will profoundly alter the present conditions of agriculture in almost all countries. Projections indicate that by 2050 many countries – making up about 35 percent of the global land area – will experience novel climates they have not been exposed to within their borders before.¹⁸ This suggests that climate change is happening so fast that crops and forage varieties in these areas are very unlikely to adapt to it on their own.

Crops that have historically been doing especially well in a given region may no longer be of use and will have to be substituted by other crops: in sub-Saharan Africa for example, where maize is a major staple food crop at present, the land may not be suitable anymore for its cultivation by 2050.¹⁹

Importance of Crop Diversity for Adaptation to Climate Change

Besides substituting and introducing new crops, there is an increasing urgency for adapting crop varieties to future climate conditions through plant breeding. The development of varieties with greater tolerance to drought, flooding and extreme temperatures, as well as

resistances to pests and diseases, is key in the context of climate change.²⁰ Because of the likelihood that climate change will result in future growing conditions beyond the parameters in which local crop diversity has developed, adaptation breeding will increasingly require access to appropriate crop genetic resources from outside national borders.²¹ Exchange of crop genetic material among countries is thus of paramount importance for climate change adaptation.²²

As future climate conditions are not entirely predictable, it is crucial to conserve as wide as possible a spectrum of crop varieties and to secure a genetic base that is in itself as broad as possible. Once a crop variety or its wild relatives are extinct, its particular traits – which might become vital for future climate change adaptation – will be lost forever!

1.2.4. The Interlinkages between Crop Diversity, Food Security and Climate Change

From the above, it becomes clear that crop diversity, food security and climate change

Key points to remember:

- Climate change is an unequivocal fact.
- Global mean temperatures will rise between 1.8 and 4 degrees Celsius by the end of the 21st century, causing more variable weather conditions and more frequent extreme events.
- The incidence and intensity of weeds, pests and diseases in cultivated areas will increase.
- Climate change will alter the conditions of agriculture in almost all countries.
- Climate change is happening so fast that agricultural crops in most areas will not be able to adapt to it on their own.
- Therefore, the urgency for adapting crop varieties to future climate conditions through plant breeding is increasing.
- In this context, access to crop genetic resources from outside national borders for agricultural research and breeding will become ever more important.

¹⁸ Grugel (2009), p. 3.

¹⁹ IPCC (2007a), chapter 5, pp. 273-313.

²⁰ Lane and Jarvis (2007), p. 1.

²¹ FAO (2009b).

²² Grugel (2009), p. 4.



are closely linked in diverse and complex ways. In fact, we are facing a triple challenge that consists in countering the loss of crop diversity and using it more effectively to achieve and maintain food security under the growing pressures of climate change.

Agricultural crop varieties and the particular traits they contain form the very base of our food security. In this sense crop diversity is a precondition for food security, so the challenge of food security cannot be met if crop diversity is not conserved.

The challenge of food security consists in simultaneously lifting one billion people out of poverty and hunger while increasing global food production to meet the needs of a larger and wealthier world population.²³ New plant breeding strategies will therefore have to aim at improving economic and environmental sustainability by developing crop varieties that produce higher yields with less use of expensive and potentially harmful industrial inputs. All of this will place increased demands on the availability of a wide range of crop genetic material.

While climate change is one of the drivers of crop diversity loss, it is also an important reason to conserve agricultural crop varieties, exchange them and use them in a sustainable way. The broader the genetic base we can rely on, the better equipped we are to adapt to changing climate conditions and to guarantee global food security. But there is urgency to act: whereas climate change is occurring at a fast pace, the process for breeding a new crop variety may take from seven up until 15 years.

Agricultural crop varieties are important as a resource that can respond to imminent as well as unknown future challenges. They form a reservoir of particular characteristics that may prove useful for the breeding of new varieties in terms of productivity, pest resistance, drought tolerance and other desirable traits. Meeting such new and unexpected challenges will require increased and continuing exchange of crop genetic material for agricultural research and breeding.²⁴ While many countries may have large gene banks relating to their major crops, there will always be a need for access to a wider range of diversity.



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²³ Hegwood (2009), p. 1.

²⁴ Cooper, Engels and Frison (1994).



Box 1.1: The Irish Potato Famine of the 1840s

On many occasions, breeders have had to go back to the centres of origin of crops in order to find natural resistances to diseases or environmental catastrophes. One such an example is the Irish potato famine of the 1840s when the *Phytophthora infestans* potato blight caused the island's population to fall by between 20 and 25 percent. Dependence on one single staple crop caused the death of approximately one million people, and a million more emigrated from Ireland. Finally, natural resistance to the potato blight had to be sought in the centres of origin in South America in order to save Europe's potato harvests.²⁵



Conserving crop diversity is thus clearly not just a question of preserving a diversity of consumer choices for tomatoes or potatoes: it is a matter of ensuring that tomatoes and potatoes, as well as any other crops, can continue to be available to feed the world!²⁶

²⁵ Moore and Tymowski (2005), p. 4.

²⁶ Sections 1.2.3. (Climate Change) and 1.2.4. (The Interlinkages of Crop Diversity, Food Security and Climate Change) are partly adapted from Moore and Goldberg (2010), p. 7.



1.3. The International Treaty - a Key Instrument to Cope with Global Challenges

The International Treaty is the only operational international agreement of a legally binding nature with the overall goal of achieving global food security through the conservation and the sustainable use of crop diversity. It also regulates exchanges of a number of the most important food crops. It thereby substantially facilitates the access to crop varieties and their components for agricultural research and breeding of new varieties.

In order to better understand the importance of conserving and exchanging agricultural crops, some insight into their special nature compared to other kinds of genetic resources will prove useful. What is it that differentiates crop genetic resources from other components of biodiversity and that requires and justifies a dedicated legal regime, apart from their evident importance for food security?

1.3.1. The Special Nature of Agricultural Crops

The special nature of agricultural crops can be summarized as follows:

- Reliance on *human management*; and
- Countries' *interdependence* on agricultural crops.

Reliance on Human Management

Unlike most other genetic resources, agricultural crops are essentially a man-made form of biodiversity. This means that they are not found in nature on their own and for the most part cannot exist without continued human intervention. Agricultural crops have been created by farmers who have domesticated wild plants over the millennia since the very beginnings of agriculture some 10 000 years ago. Through a continuing process of selection



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and breeding they have been made suitable for agriculture.

Undesirable natural traits – such as shattering of seed-heads prior to maturity – that allow those plants to survive in the wild have been deliberately bred out, while additional traits that were not previously found in a given plant – such as resistance to drought – have been bred in. Any individual crop variety is thus the product of the breeding work of many generations of farmers and breeders, which may stretch across many countries and continents. Without continuing human care most agricultural crops will revert to the wild and may be of little further value to food and agriculture.

The plant breeding process calls for a broad range of crop varieties as inputs into any single successful new variety. At the stage of developing a new commercial variety, breeders may have to screen literally thousands of samples in search of a particular trait. Depending on the crop, they commonly work with up to around 60 different varieties originating from 20 to 30 different countries. This wealth of parentage means that it is difficult to track the origins of any given crop variety.²⁷ It is equally complex to calculate the extent to which any particular trait that has been bred in was instrumental

in producing the specific characteristics of a given new variety.

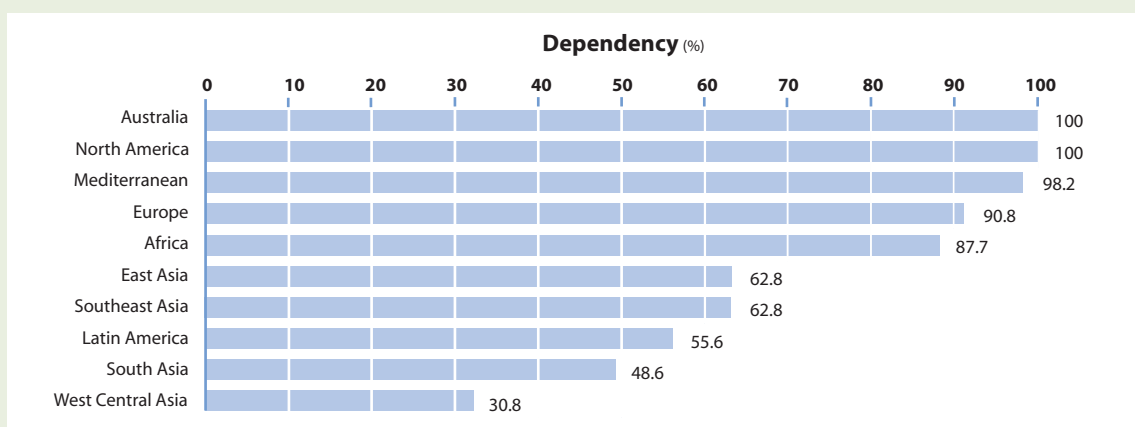
In both these senses, agricultural crop varieties are unlike other forms of biodiversity. Plant varieties used for the development of pharmaceutical products, for example, are generally wild plants that exist in nature. A given pharmaceutical product may often be derived from a single natural source, with human input limited to the knowledge of the properties of the natural sources.

Countries' Interdependence on Agricultural Crop Varieties

Agricultural crops have been freely and widely exchanged across the world regions for centuries: potatoes originated in the Andes in Latin America and are now staple crops in Europe and elsewhere in the world; barley and wheat were first domesticated in the Near East; rice originated in Southeast Asia.²⁸ The exchange of agricultural crops has continued over the ages, with the result that today almost all countries in the world depend heavily on each other regarding crop diversity for their agricultural development.

Unlike the movements of genetic resources for pharmaceutical research on which much

Figure 1.3: Percentages of Food Production of Major Crops Based on Species Originating from Other Regions



Source: The State of the World's Plant Genetic Resources for Food and Agriculture.²⁹

²⁷ Fowler (2003).

²⁸ FAO (2001b).

²⁹ FAO (1997), p. 23.



Table 1.1: Indicators of Global Interdependency of Selected Crops

Crop	Region(s) of significant genetic diversity	Major <i>ex situ</i> collections	Major producing collections	Major breeding and research activities	Countries for which major consumption has been recorded	Products/ importing countries
Eggplant (<i>Solanum melongena</i>)	Indo-Myanmar region	AVRDC, India	China, India, Egypt, Turkey, Indonesia	AVRDC, India	African countries, China, India, Indonesia, Malaysia, Nepal, Pakistan, Sri Lanka	France, Germany, Iraq, United Kingdom, United States of America
Groundnut (<i>Arachis hypogea</i>)	South America	CGIAR, USDA, India, China, Senegal, Brazil	China, India, Indonesia, Nigeria, United States of America	Australia, Brazil, China, India, United States of America	Confectionary China, India, Indonesia, Nigeria, United States of America	Groundnut shelled Canada, Mexico, Netherlands, Russian Federation, United Kingdom
Maize (<i>Zea mays</i>)	Asia, Central America and Mexico, North America, South America	CGIAR, India, Mexico, Russian Federation, United States of America	Argentina, Brazil, China, Mexico, United States of America	CGAR, Africa, Brazil, China, Europe, India, United States of America	China, India, Indonesia, Mexico, South Africa	China, Japan, Mexico, Republic of Korea, Spain

Source: The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.³⁰

media focus has been put in recent years because they often occur one-sidedly from genetically rich countries in the South to industrialized countries in the North, in the case of agricultural crops the flow is two-way.

No country or region of the world is entirely self-sufficient in terms of crop diversity needed to sustain and improve its major food crops: the degree of dependence for

the major food crops is over 50 percent for most world regions.³¹

This high degree of interdependence that is illustrated in Figure 1.3 and Table 1.1 is likely to further increase under the growing pressures of climate change. These are the main reasons that called for the adoption of an international agreement which would facilitate access to crop genetic resources for agricultural research and breeding.³²

Key points to remember:

- Unlike most other components of biodiversity, agricultural crops are essentially man-made: they are the product of the breeding work of farmers and breeders over many generations.
- Without continued human management most agricultural crops would revert to the wild and be lost.
- It is difficult to track the exact origins of crop varieties because generally they incorporate traits from many different varieties from different regions.
- All countries in the world depend on each other regarding crop diversity for agricultural research and breeding.
- Global interdependence on crop genetic resources will further increase under climate change.
- Because of their special nature compared to other components of biodiversity, the International Treaty facilitates the access to crop varieties and their components for agricultural research and breeding of new varieties.

³⁰ FAO (2010), p. 19.

³¹ In Central Africa the interdependence ranges from 67 percent to 94 percent and in the Indian Ocean countries from 85 percent to 100 percent. At the other end of the scale we have for example Bangladesh where the figures range from 14 percent to 21 percent.

³² Section 1.3.1. (The Special Nature of Agricultural Crops) is adapted from Moore and Goldberg (2010), pp. 3-5.



1.3.2. The Policy Contribution of the International Treaty

Now that the learner is aware of the fact that crop diversity is instrumental to cope with the challenges of food security and climate change and has understood the special nature of crop genetic resources that calls for specific regulations for facilitated exchange, it is time for a closer examination of the policy contribution of the International Treaty.

In its Objectives

The objectives of the International Treaty are laid down in its Article 1. There we find the first and most evident reference to the challenges. In fact, the overall goal of the International Treaty is the achievement of food security. This goal is to be attained through the conservation and the sustainable use of crop genetic resources, and the fair and equitable sharing of the benefits that may arise from the use of these

resources. While lesson 2 of this module (Objectives, Scope and Basic Concepts) will go into more detail with regard to the objectives of the International Treaty, its policy link to both the crop diversity and the food security challenge is herewith clearly established.³³

In its Main Components

Lesson 4 of this module (Main Components and Governance of the International Treaty) will give a clear overview of the International Treaty's main components. However, we will at this point already take a preview on them.

Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture

Articles 5 and 6 of the International Treaty provide guidance to countries regarding measures and activities to be undertaken that promote the conservation and the sustainable use of crop diversity.



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³³ International Treaty on Plant Genetic Resources for Food and Agriculture (2001).



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An important component of the provisions contained in Article 5 (related to conservation) is the characterization and evaluation of crops and their potentially useful traits. This will notably help agricultural researchers and breeders to spot the particular characteristics they need for the development of new varieties. The article also puts forward a complementary approach to conservation of agricultural crops both in the fields as well as in gene banks.

The provisions of Article 6 (related to sustainable use) focus, *inter alia*, on the importance of maintaining diverse farming systems and on implementing participatory approaches to plant breeding – including collaborations between researchers and farmers for the development of locally adapted varieties. They also promote on-farm management of crop diversity to reduce genetic erosion and increase world food production in a sustainable way.

Farmers' Rights

A distinguishing feature of the International Treaty is the fact that Article 9 recognizes the enormous contribution of generations of local and indigenous communities and farmers around the world over thousands of years in conserving and expanding the genetic diversity of crops. Through this recognition of Farmers' Rights, the International Treaty aims at supporting farmers in managing and conserving crop diversity on their farms.³⁴

The implementation of Farmers' Rights is largely a matter for national governments. Therefore, Article 9 proposes a number of measures to protect and promote Farmers' Rights at the national level. These include measures for the protection of traditional knowledge relevant to crop diversity, the right to participate in sharing benefits that may arise from the utilization of crop diversity, and the right to participate in

³⁴ Hegwood (2009), p. 3.





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national decision-making processes related to crop diversity.

The Multilateral System of Access and Benefit-sharing

The Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”) is established by Articles 10-13. It is often referred to as the core of the International Treaty. The Multilateral System can be thought of as a global pool of a number of the most important crop genetic resources for food security, shared and managed jointly by all countries that adhere to the International Treaty.

Countries grant each other facilitated access to these crop genetic resources for agricultural research and breeding activities in exchange for a commitment to share the benefits that may arise from their subsequent use. The crops that form part of the Multilateral System are defined in the list that is commonly referred to as ‘Annex I’. Together, the crops

listed in Annex I account for more than 80 percent of human calorie intake from plants.

Placing collections in the Multilateral System will promote their use by a much wider community. The Multilateral System provides a transparent and reliable framework for the exchange of the crop genetic resources that are contained in the global gene pool. It thereby greatly facilitates their conservation and favours exchange between and within regions with similar climate conditions. This, in turn, contributes to speeding up the use of these crop genetic resources for agricultural research and breeding of new crop varieties that achieve higher yields and nutritional values and that are adapted to new climate conditions.³⁵

The Funding Strategy

In its Article 18 the International Treaty establishes the base for a strategy to facilitate the mobilization of funds for its own functioning and the realization of its



³⁵ Hegwood (2009), p. 2, Grugel (2009), pp. 5-7 and Visser (2009), pp. 5-7.



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objectives (hereafter “Funding Strategy”). The Funding Strategy recalls that the various Contracting Parties dispose of uneven capacity and financial resources, and calls especially upon Contracting Parties that are developed countries to effectively allocate resources for the conservation and sustainable use of crop diversity worldwide.

The centre piece of the Funding Strategy is its so-called ‘Benefit-sharing Fund’. This is a multilateral fund that collects financial resources which are used to support initiatives aimed at the conservation and the sustainable use of crop diversity. Financial resources from the Benefit-sharing Fund are primarily allocated to projects in developing countries that have a focus on helping ensure sustainable food security by assisting farmers to adapt to climate change.³⁶

Many developing countries feel dependent on the availability of external financial resources for the elaboration and imple-

mentation of national programmes or plans for the conservation and sustainable use of crop diversity. The Benefit-sharing Fund provides the mechanism with the potential to overcome this obstacle to the realization of the objectives of the International Treaty.³⁷

The effective implementation of the International Treaty’s objectives and its main components is thus critical to cope with the challenges of the 21st century.

Notably, the Multilateral System facilitates availability of and access to a number of the most important crop genetic resources for food security. Through this facilitated exchange it boosts agricultural research and breeding activities for the development of high-yielding and more nutritious crops that are better adapted to new and extreme climate conditions. This, in turn, contributes significantly to addressing the food security and climate change challenges.

³⁶ In 2010, the Benefit-sharing Fund was officially incorporated as an option for adaptation funding in the adaptation funding interface of the United Nations Framework Convention on Climate Change (UNFCCC).

³⁷ Visser (2009), pp. 5-7.





The Funding Strategy enhances the provision of financial resources for the implementation of the International Treaty at the international, regional and national level. It supports countries in the elaboration and implementation of national programmes or plans for the conservation and sustainable use of crop diversity and in developing and

maintaining the technology and human capital needed to allow for the functioning of the Multilateral System. The Benefit-sharing Fund of the Funding Strategy, in particular, supports initiatives in developing countries that aim at achieving food security in the context of climate change through the conservation and the sustainable use of crop diversity.

Key points to remember:

The International Treaty provides an effective policy response to the global challenges of crop diversity loss, food security and climate change, through:

- its comprehensive provisions providing guidance to countries regarding the measures and activities to be undertaken at the national level for the conservation and the sustainable use of crop diversity;
- its provisions on Farmers' Rights which aim at supporting farmers and local and indigenous peoples in conserving crop diversity on their farms;
- the Multilateral System that facilitates access to a global gene pool of crop genetic resources for agricultural research and breeding of new crop varieties that may achieve higher yields and nutritional values and that are adapted to new climate conditions; and
- the Benefit-sharing Fund of the Funding Strategy supports initiatives for the conservation and the sustainable use of crop diversity in developing countries, with a focus on helping ensure sustainable food security by assisting farmers adapt to climate change.





1.4. Conclusive Summary

The International Treaty is the key policy instrument for coping with the triple challenge of countering the loss of crop diversity and using it more effectively to achieve and maintain food security under the growing pressures of climate change.

With global average temperatures rising between 1.8 and 4 degrees Celsius until the end of the century, climate change will alter current growing conditions dramatically. Over one billion people are already suffering from chronic hunger and malnutrition today, and the world population continues to grow to reach over nine billion by 2050. The availability of a broad genetic base of agricultural crop varieties – a diversity of which 75 percent has already been lost forever – is most crucial to breed crop varieties that achieve higher yields and are adapted to new climate pressures.

Therefore, existing crop diversity must be conserved and crop genetic resources need to be broadly available for research and breeding activities. Agricultural crops and the traits they contain (e.g. drought resistance, pest resistance, high yields) are the building blocks which constitute the very base of our food security. The broader the genetic base we can rely on, the better equipped we are to adapt to changing climate conditions in order to guarantee global food security.

Agricultural crops are different from other components of biodiversity because they depend on continued human management. Every country relies on crop genetic material

that has originated in other countries. This interdependence will further increase under the growing pressures of climate change.

The International Treaty confronts the triple challenge through its four main components:³⁸

- With its provisions on **Conservation and Sustainable Use** of Plant Genetic Resources for Food and Agriculture the International Treaty provides the legal framework for the creation of national legislations and policies to ensure that agricultural crops are preserved and continue to be cultivated and used.
- Its provisions on **Farmers' Rights** that aim at supporting local and indigenous communities and farmers in managing and conserving crop diversity on their farms.
- The **Multilateral System** of Access and Benefit-sharing pools samples of a number of the world's most important agricultural crops for food security and makes them available for agricultural research and breeding, which is key for increasing yields and adapting to climate change.
- The aim of the **Funding Strategy** is to enhance the availability of resources for the realization of the International Treaty's objectives. The Benefit-sharing Fund supports initiatives in developing countries that help ensure sustainable food security by assisting farmers to adapt to climate change.

³⁸ For a more detailed and complete introduction to the main components of the International Treaty refer to lesson 4 of this module (Main Components and Governance of the International Treaty).



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Objectives, Scope and Basic Concepts



LESSON 2



Learning objectives

At the end of this lesson, the learner will:

- be familiar with the basics of the International Treaty;
- have an overview of the objectives and the scope of the International Treaty;
- be aware of the main advantages of being a Contracting Party of the International Treaty; and
- understand the basic terms and concepts specific to the policy area of crop diversity, and in particular to the International Treaty.

Target learner groups



Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Vicia faba, fava bean, by Elizabeth Blackwell (1739)

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2.1. Overview of the Lesson

Some terms and concepts used in the context of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”) are of a rather technical nature. This lesson, therefore, provides newcomers to the policy area of crop diversity with the basics of the International Treaty.

The first part of the lesson familiarizes the learner with the objectives and the scope of the International Treaty and presents an overview of the main advantages for countries of being a member of the International Treaty.

The second part focuses on the basic vocabulary used in the broader biodiversity policy area and in the context of the International Treaty more specifically. Technical terms are defined and explained in an easily understandable language. This part can also be used independently as a glossary.

After completion of this lesson, it is expected that the learner will be able to fully comprehend the terms and concepts used in the other lessons of this introduction module. It will also improve his or her understanding of the text of the International Treaty and other related official documents.



2.2. The International Treaty at a Glance

The International Treaty is a legally binding agreement between countries. It aims at countering the loss of crop diversity and enhancing the use thereof, with the ultimate goal of achieving global food security.

After a long negotiation process the International Treaty was adopted by Resolution 3/2001 of the Thirty-first Session of the Conference of the Food and Agriculture Organization of the United Nations (FAO) in November 2001 and entered into force in June 2004. By the end of 2010, more than 126 countries had become members of the International Treaty. This short ratification process and rapid increase in membership is a strong indication of the relevance of the International Treaty.¹

This first part of the lesson will take a closer look at what the International Treaty is about

and why it is important for governments to be part of it.

2.2.1. Objectives and Scope of the International Treaty

Objectives

With the ultimate goal of achieving sustainable agriculture and global food security, the International Treaty pursues the following three main objectives:²

- Conservation of plant genetic resources for food and agriculture (PGRFA);
- Sustainable use of PGRFA; and
- Sharing the benefits arising from the use of PGRFA in a fair and equitable way.



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¹ For a constantly updated list of Contracting Parties see: <http://www.fao.org/Legal/treaties/033s-e.htm>.

² International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 1.



Generally speaking, PGRFA are plants that are of value to human nutrition and used in agriculture – often simply referred to as ‘crops’ – including their parts and components, such as seeds or genes. The International Treaty proposes a set of measures for countries to implement at the national level to conserve their PGRFA and use them more effectively and in a sustainable way.

To enhance the conservation and the sustainable use of crop diversity, the International Treaty creates a system which facilitates exchanges of PGRFA for purposes of agricultural research and breeding: the Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”). As its full name suggests, the Multilateral System is also the main mechanism that

promotes the sharing of benefits which are generated through the use of PGRFA in a fair and equitable manner among countries and stakeholders.³

Scope

The International Treaty is clear and brief in its Article 3, stating: “this Treaty relates to plant genetic resources for food and agriculture”.⁴

The International Treaty thus establishes a framework for the conservation and the sustainable use of **all** PGRFA, including also wild plants from which crops are derived (referred to as “Crop Wild Relatives” or CWR). It does not apply, however, to plant genetic resources that are of no value to food and agriculture.⁵

Key points to remember:

- The International Treaty is a legally binding agreement between countries.
- The International Treaty was adopted by the FAO Conference in November 2001 and entered into force in June 2004.
- The main objectives of the International Treaty are the conservation and the sustainable use of PGRFA, and the fair and equitable sharing of benefits that arise from the use of these resources.
- The International Treaty establishes a framework for the conservation and the sustainable use of all PGRFA.
- By the end of 2010, more than 126 countries had become members of the International Treaty.

³ For definitions and more detailed explanations of the employed terms and concepts please refer to part two of this lesson (Terms and Definitions). For more information on the International Treaty’s provisions on Conservation and Sustainable Use and the Multilateral System please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

⁴ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 3.

⁵ The fact that the scope of the International Treaty covers all PGRFA is important to highlight in order to avoid confusion with the coverage of the Multilateral System. In fact, whereas the International Treaty as a whole applies to all PGRFA, its Multilateral System regulates the terms of access and benefit-sharing of a specific list of a number of the most important food crops and forages. The list is contained in Annex I of the International Treaty. For more details on the Multilateral System please refer to part two of this lesson (Terms and Definitions – a Glossary) and to lesson 4 of this module (Main Components and Governance of the International Treaty).



2.2.2. Main Advantages of Being a Contracting Party of the International Treaty

In the language of the International Treaty member countries are called ‘Contracting Parties’. On a general level, Contracting Parties profit from the guidance provided by the International Treaty for the elaboration of national laws and policies related to crop diversity. A main direct advantage is that agricultural researchers and breeders of a Contracting Party enjoy facilitated access to the global pool of crop samples of the Multilateral System. At the same time Contracting Parties and stakeholders based within their borders have the possibility to receive a share of the benefits that arise from the use of these crops. On the political level, a Contracting Party can ensure that its national needs and interests related to PGRFA are taken into consideration by the international community.

Countries that are not Contracting Parties of the International Treaty, on the contrary,

do not enjoy all of these advantages. In particular, they are not eligible to receive financial support under the benefit-sharing mechanism of the Multilateral System, and they do not receive support in the form of capacity building.

Facilitated Access to the Global Gene Pool

All countries of the world highly depend on each others’ PGRFA for their sustainable agricultural development.⁶ The most immediate advantage for a Contracting Party is that any natural or legal person under its jurisdiction enjoys easy access to the vast range of crop samples contained in the global gene pool of the Multilateral System for purposes of agricultural research and breeding.

Natural and legal persons include, among others, national gene banks and research institutions, individual breeders and farmers, non-governmental organizations as well as public and private breeding companies.



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⁶ To learn more about countries’ interdependence on PGRFA please refer to lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change).



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By the end of 2010 this global gene pool encompassed more than 1.3 million unique samples of crop varieties, and more are continuously being added to it. These samples can be accessed and used for multiplication and subsequent cultivation, for example. Facilitated access to the global gene pool also favours the development of new varieties with higher yields, for instance, or with resistances to stresses induced by climate change, such as drought, salinity or pests.

Thanks to the International Treaty it becomes easier to locate existing crop samples. Contracting Parties and other entities that formally include their samples into the Multilateral System notify the Secretariat of the International Treaty (hereafter “Secretariat”) about their inclusions, and all formal notifications are published online.⁷ In addition, the Secretariat works towards

more efficient coordination and integration of existing web-based catalogues and other information technology systems that make it easier to search for PGRFA.

Another main element of facilitated access under the International Treaty is that complicated procedures and time-consuming negotiations of specific contracts for exchanges of PGRFA are eliminated. A breeder who would like to receive a given crop sample from a certain gene bank collection, for example, can simply do so according to the terms of the Standard Material Transfer Agreement (SMTA).

The SMTA is a standard contract for transfers of crop samples under the Multilateral System which has been negotiated and agreed internationally. It provides transparent regulations and guarantees legal security in exchanges of PGRFA.

⁷ For inclusions of PGRFA into the Multilateral System see: http://www.planttreaty.org/inclus_en.htm.



Sharing the Benefits from the Use of Crop Diversity

Contracting Parties and stakeholders based within their borders have the possibility to receive a share of the benefits that arise from the use of the PGRFA that are exchanged under the Multilateral System. Once crop genetic material has been included in the common gene pool of the Multilateral System, this material falls under the shared competence of all Contracting Parties for the benefit of humanity. Accordingly, a country cannot expect an individual benefit in return from a specific crop sample it has placed in the gene pool. In fact, the benefits that arise from the use of material from the Multilateral System are shared in a multilateral way.

Benefits are shared according to internationally agreed priorities for the conservation and sustainable use of crop diversity and taking into account the needs of Contracting Parties. On this note, the International Treaty foresees that benefits flow primarily to farmers who conserve and sustainably utilize crop diversity, especially in developing countries and countries with economies in transition.

More concretely, the International Treaty foresees the sharing of both non-monetary and monetary benefits arising from the use of the material contained in the Multilateral System.

Options for non-monetary benefit-sharing include:

- *Exchange of information* related to PGRFA, such as inventories, information on technologies and relevant research results;
- *Access to and transfer of technology* for the conservation and sustainable use of PGRFA that are part of the Multilateral System; and
- *Capacity-building* in developing countries, primarily related to conservation and sustainable use, including through developing and strengthening facilities for those purposes, and carrying out scientific research.

The mechanism that regulates the sharing of monetary benefits is called 'Benefit-sharing Fund'. The Benefit-sharing Fund is an international trust fund that invests in high impact projects for the conservation and sustainable use of crop diversity. It has a fundraising target of US\$ 116 million over a five year period ending December 2014.



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Any governmental or non-governmental organization, including gene banks and research institutions, farmers and farmers' organizations and regional and international organizations, based in developing countries that are Contracting Parties to the International Treaty, has the possibility to apply for financial support from the Benefit-sharing Fund.⁸

Having a Say in International Decision-making Related to PGRFA

Contracting Parties meet at least every two years in the ordinary sessions of the Governing Body of the International

Treaty (hereafter “Governing Body”) to take decisions and provide guidance regarding the further implementation of the International Treaty. The Governing Body has positioned itself as a major inter-governmental policy-making body in the area of genetic resources for food and agriculture and it is increasingly gaining importance in other related forums. The fact that the decisions of the Governing Body are taken by consensus ensures that the outcomes are balanced and all Contracting Parties have an equal say in the decision-making process.

Key points to remember:

- Contracting Parties profit from the guidance provided by the International Treaty for the elaboration of national laws and policies related to crop diversity.
- Agricultural researchers and breeders enjoy facilitated access to the global gene pool of the Multilateral System with over 1.3 million crop samples.
- Contracting Parties and stakeholders based within their borders have the possibility to receive a share of the benefits arising from the use of crop diversity – both in monetary and non-monetary terms.
- A Contracting Party can ensure that its national needs and interests related to PGRFA are taken into consideration by the international community.

⁸ Please refer to lesson 4 (Main Components and Governance of the International Treaty) to learn more about the Benefit-sharing Fund in the context of the Funding Strategy.



2.3. Terms and Definitions – a Glossary

This part provides definitions and explanations of some key terms and concepts that are essential for a sound understanding of the International Treaty. It can also be used independently as a glossary. Additional notions are introduced in their respective contexts in the other lessons.

2.3.1. Biodiversity

The term ‘biodiversity’ is short for ‘biological diversity’. Broadly speaking, biodiversity is often presented as the variety of life in all its manifestations and at all levels of

biological organization, from the molecular up to the ecosystem level.⁹

Keeping this in mind will help to understand the legal definition that is contained in the Convention on Biological Diversity (CBD):¹⁰ “‘Biological diversity’ means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”¹¹



Courtesy Flickr/Orchidgalore

⁹ Gaston and Spicer (2004), p. 4.

¹⁰ The CBD is an international agreement aiming at the conservation and the sustainable use of all biodiversity and benefit-sharing related to the genetic resources that are part thereof. For more information about the relationship of the International Treaty and the CBD please refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

¹¹ Convention on Biological Diversity (1992), Article 2.

With 193 Parties to the CBD, the acceptance of the definition among states can be considered universal. See: <http://www.cbd.int/information/parties.shtml>.





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Species diversity is the most obvious type of biodiversity. A ‘species’ is a group of organisms that can reproduce, such as cats or maize. Within a species, however, there is genetic diversity. Groups of organisms that share a common ancestor and have the same characteristics are identified as a ‘breed’ for animals and as a ‘variety’ for plants. An ecosystem, simply put, is the environment in which species live.¹²

Biodiversity can thus be understood as the variety and variability of animals, plants and micro-organisms at the genetic, species and ecosystem level.

Key points to remember:

- Biodiversity is short for ‘biological diversity’.
- Broadly speaking, biodiversity can be understood as the variety of life in all its manifestations.
- There are three levels of biodiversity: the genetic, species and ecosystem level.

2.3.2. Genetic Resources, Genetic Material and Units of Heredity

The internationally agreed definition of the term ‘genetic resources’ contained in the CBD is that they are “genetic material of actual or potential value”. ‘Genetic material’ is defined as “any material of plant, animal, microbial or other origin containing functional units of heredity”.¹³

‘Heredity’ is the passing of traits to offspring. ‘Units of heredity’ are those parts of a living organism that possess the quality to pass traits, such as DNA or genes. Samples of genetic resources containing units of heredity – such as seeds, pollen, sperm or individual organisms – are called ‘germplasm’.¹⁴

The above definition of genetic resources does not specify the nature of the actual or potential value a genetic resource must possess. In fact, this value may be economic, just as well as it may be scientific, academic or even artistic in nature, for example. Even if a given genetic

¹² CBD Youth Homepage (2008).

¹³ Convention on Biological Diversity (1992), Article 2.

¹⁴ FAO (2001).



resource might not be regarded as valuable at present, it may well become so in the future. Therefore, the term ‘genetic resources’ comprises virtually any genetic material.¹⁵

Genetic resources make up a substantial part of biodiversity. However, they do not include the ecosystem level which is a component of biodiversity. In addition, the term ‘biodiversity’ expresses also the diversity between and within its components, whereas genetic resources comprise only the components themselves.

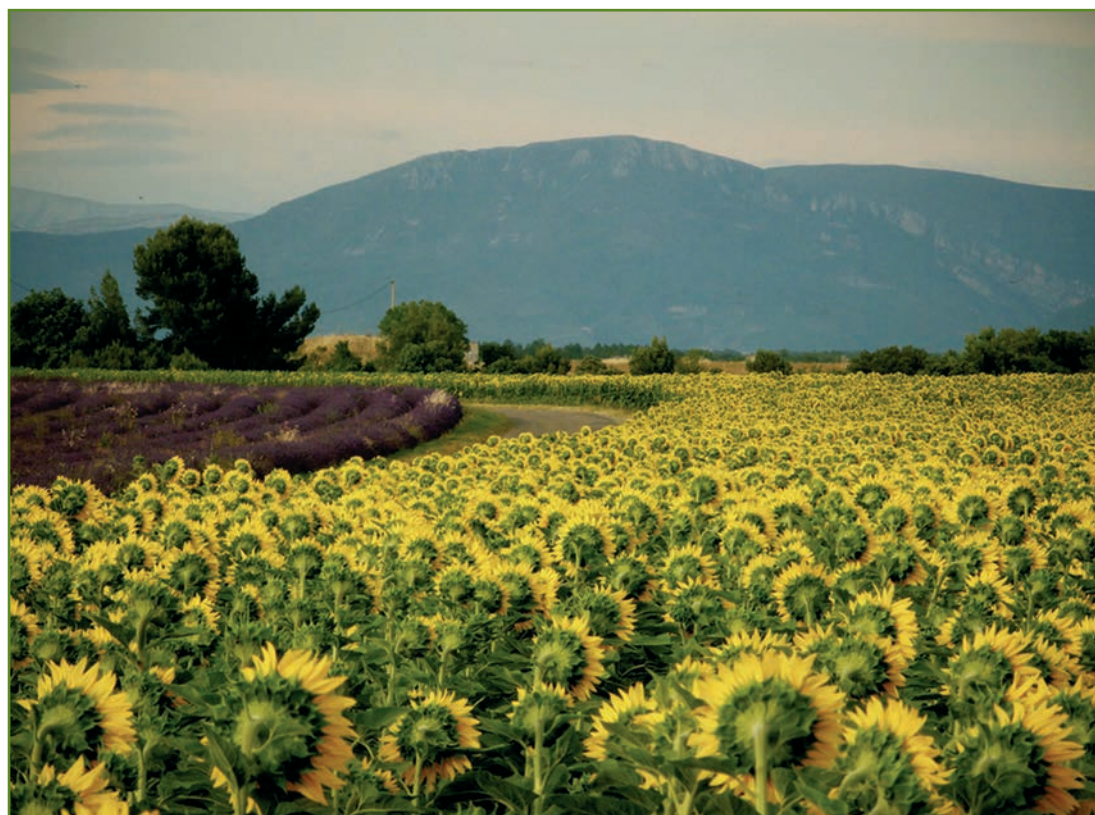
Key points to remember:

- Genetic resources are living organisms or parts thereof that contain functional units of heredity such as DNA or genes.
- Genetic resources are a main component of biodiversity.

2.3.3. Agricultural Biodiversity

‘Agricultural biodiversity’ is a subset of biodiversity, sometimes also referred to as ‘agro-biodiversity’. Broadly speaking, agricultural biodiversity includes all components of biodiversity that constitute agricultural ecosystems (or ‘agro-ecosystems’). In other words, it includes all components of biodiversity that are of relevance to food and agriculture: the variety and variability of animals, plants and micro-organisms which are necessary to sustain key functions of the agro-ecosystem, its structure and processes for, and in support of, food production and food security.¹⁶

In that sense, the term agricultural biodiversity comprehends the variety and variability



Courtesy Flickr/Alpha du centaure



¹⁵ Swiss Academy of Sciences (2006).

¹⁶ FAO (2004).

Key points to remember:

- Agricultural biodiversity includes all components of biodiversity that are of relevance to food and agriculture.

of genetic resources for food and agriculture, such as agricultural crops and their wild relatives, livestock, forest and fishery resources. It furthermore includes the diversity of non-harvested species that support production and agro-ecosystems, such as soil micro-organisms, predators, pollinators, weeds and pests, as well as the diversity of the agro-ecosystems themselves.¹⁷

2.3.4. Plant Genetic Resources for Food and Agriculture

‘Plant genetic resources for food and agriculture’ are for time-saving reasons generally called ‘PGRFA’. The International Treaty defines PGRFA as “any genetic

material of plant origin of actual or potential value for food and agriculture”. The term genetic material is defined as “any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity”.¹⁸

There is quite some analogy between the definition of PGRFA and the one of genetic resources we have seen above. PGRFA fall under the category of genetic resources and are therefore a component of biodiversity. However, PGRFA are exclusively of plant origin, whereas genetic resources in general can also be from animals, for example. The second key difference with regard to genetic resources is that the definition of PGRFA specifies that the nature of the actual or potential value of a plant genetic resource must be of relevance to food and agriculture for it to qualify as a plant genetic resource for food and agriculture.



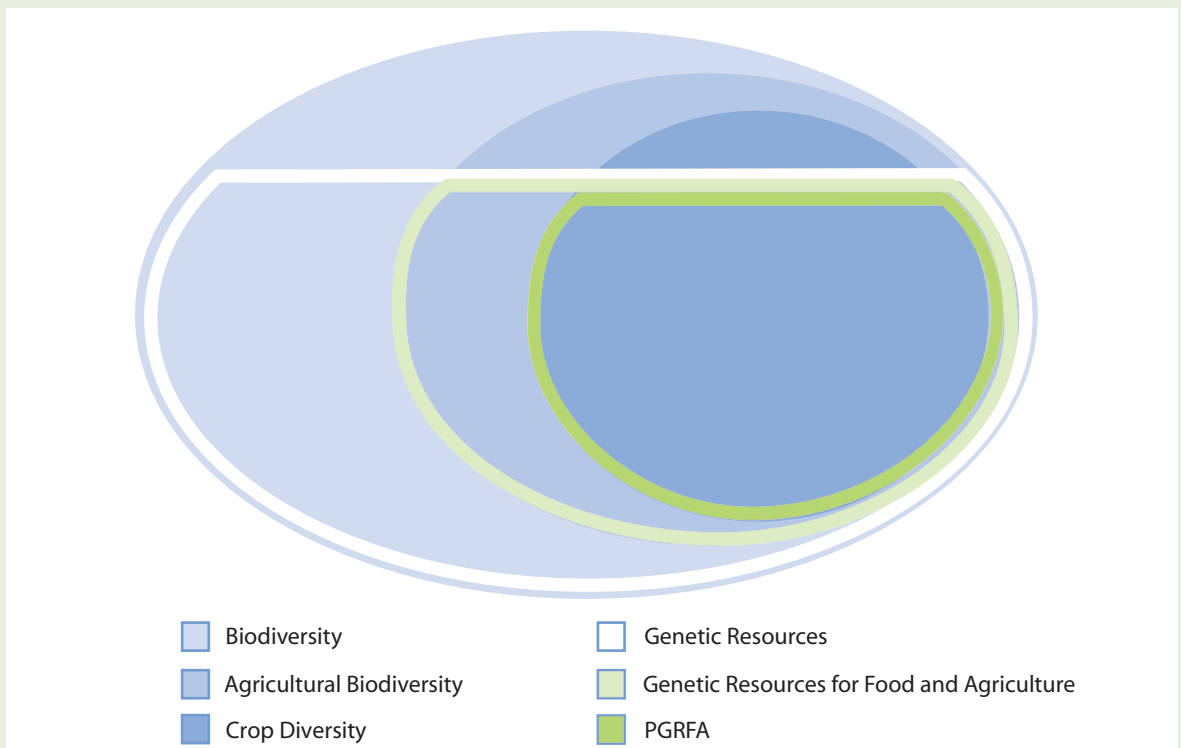
© FAO/Roberto Faidutti

¹⁷ UK Food Group (2008).

¹⁸ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 2.



Figure 2.1: Biodiversity, Agricultural Biodiversity, Crop Diversity, Genetic Resources, Genetic Resources for Food and Agriculture and PGRFA



PGRFA are also often simply called ‘crops’ when referring to entire genera or species of agricultural plants, and ‘crop genetic material’ when referring to samples of reproductive material. The variety and variability of all PGRFA, i.e. the diversity between and within agricultural crops and their reproductive parts, is called ‘crop diversity’.

2.3.5. Crop, Species, Variety and Cultivar

For the purpose of the present educational module and in the text of the International Treaty, the term ‘crop’ can refer to the common language names of both species and genera of PGRFA, depending on the crop in question. In biology, a ‘species’ is a taxonomic rank of classification for a group of organisms that are capable of interbreeding and producing fertile offspring. A genus is a taxonomic rank above the species.

When referring to apples, for example, we are speaking of the entire genus called *Malus*, including all different species of apples, such as *Malus sylvestris* (European Wild Apple) or *Malus sieversii* (Asian Wild Apple). In the case of the eggplant, on the other hand, we are referring to a single species (*Solanum melongena*). In common language, however, both apples and eggplants are ‘crops’.

Key points to remember:

- PGRFA are living organisms of plant origin or parts thereof that are of value for food and agriculture and that contain functional units of heredity such as DNA or genes.
- PGRFA are a component of agricultural biodiversity.
- The term ‘crop diversity’ describes the diversity of PGRFA at the genetic and at the species level.





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A ‘variety’ is a taxonomic rank below that of the species. The International Treaty defines it as “a plant grouping, within a single botanical taxon of the lowest known rank, defined by the reproducible expression of its distinguishing and other genetic characteristics”.

A given crop variety distinguishes itself from other varieties of the same species in its physical appearance, taste or any other trait, however it shares a common ancestor and can normally interbreed with other varieties of the same species. To come back to the example of eggplants, as illustrated in the picture above, there are many varieties of different colors, yet they all belong to the same species.

Many varieties of PGRFA are often also called ‘cultivars’. Cultivar is short for ‘cultivated variety’, and according to the Code of Nomenclature for Cultivated Plants it “is an assemblage of plants that has been selected for a particular character or combination of characters, is distinct, uniform and stable in those characters, and

when propagated by appropriate means, retains those characters”.¹⁹ However, the term cultivar cannot be used as a general synonym for the term variety. It is not a taxonomic rank and applies only to varieties that have been obtained through human intervention and that comply with the criteria of distinctiveness, uniformity and stability, not including varieties of crop wild relatives, for example.

Key points to remember:

- The term ‘crop’ can refer to the common language names both of species and genera of PGRFA, depending on the crop in question (e.g. apple = genus, while eggplant = species).
- ‘Species’ is a taxonomic rank of classification in biology for a group of organisms that are capable of interbreeding and producing fertile offspring.
- ‘Genus’ is a taxonomic rank above species, while ‘variety’ is a taxonomic rank below species.

¹⁹ International Society for Horticultural Plants (2004), Article 2.3.





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2.3.6. *Ex situ* and *In situ* Conservation

‘*Ex situ*’ is a Latin phrase and its literal translation means ‘off-site’. Analogically, ‘*in situ*’ can be translated as in the natural or original place, or ‘on-site’. In the context of PGRFA both expressions are mainly used with regard to the management and the conservation of crops.

The International Treaty defines the two methods as follows:

- “*In situ* conservation means 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.”

- “*Ex situ* conservation means the conservation of plant genetic resources for food and agriculture outside their natural habitat.” Accordingly, “*ex situ* collection means a collection of plant genetic resources for food and agriculture maintained outside their natural habitat.”²⁰

Ex situ conservation describes a conservation method which entails the actual removal of germplasm from the original habitat or natural environment in order to be preserved in facilities such as gene banks. *In situ* conservation is a conservation method that attempts to preserve the integrity of genetic resources by conserving them within the evolutionary dynamic ecosystems of their original habitat or natural environment.²¹

Key points to remember:

- *In situ* conservation refers to the conservation of biodiversity and its components in their natural surroundings.
- *Ex situ* conservation refers to the conservation of genetic resources in facilities outside their natural habitat, such as gene banks.

²⁰ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 2.

²¹ FAO (1999).

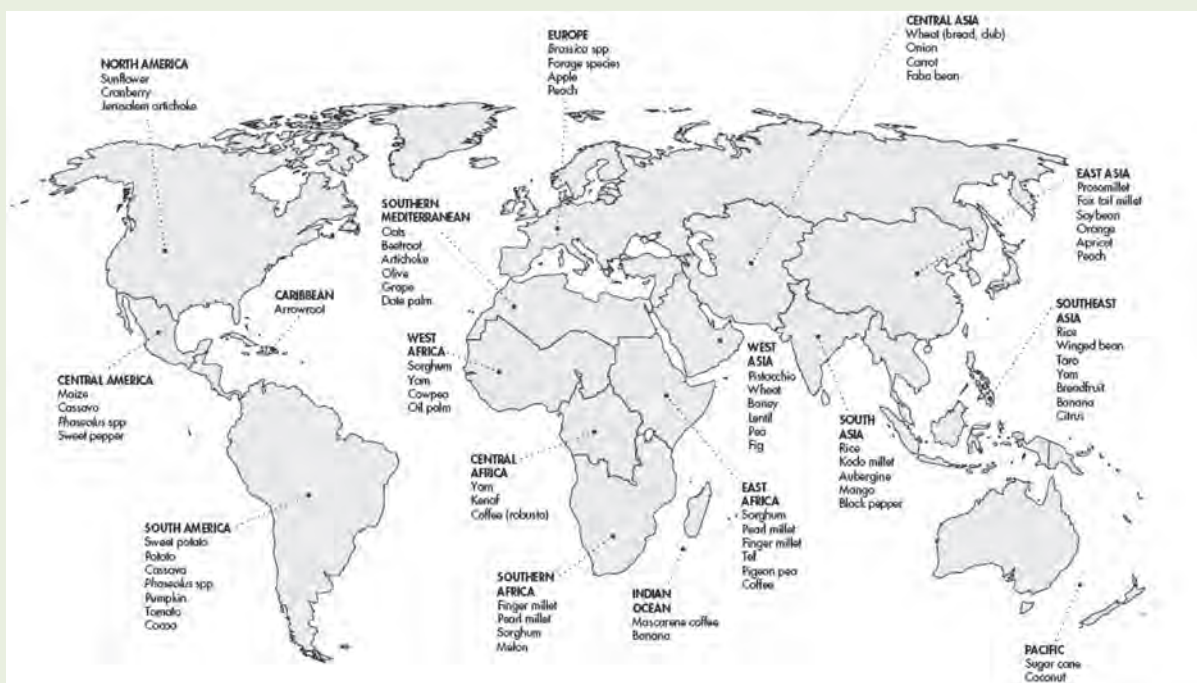


2.3.7. Centre of Origin and Centre of Crop Diversity

The two concepts of ‘centre of origin’ and ‘centre of diversity’ are very related but do not express the exact same thing. The International Treaty defines a centre of origin as “a geographical area where a plant species, either domesticated or wild, first developed its distinctive properties.” A centre of crop diversity is defined as “a geographic area containing a high level of genetic diversity for crop species in *in situ* conditions.”²²

The centre of crop diversity can also be the centre of origin for a given species and the two areas do actually in many cases, however not always, coincide. Often, crops achieve higher yields when they are domesticated outside the centre of origin of their wild relatives, and therefore a centre of crop diversity can emerge over time in an area that is not the centre of origin of the crop.²³ In the case of maize, which has its origins in Central America, significant centres of diversity have developed in other regions over time, for example in Asia.

Figure 2.2: Regions of Diversity of Major Cultivated Plants



Source: The State of the World's Plant Genetic Resources for Food and Agriculture.²⁴

²² FAO (1999).

²³ Jennings and Cock (1977), p. 51.

²⁴ FAO (1997), p. 21.





Box 2.1: The Centre of Origin of Maize

Despite its abundance and importance for food security, the biological origin of maize has been a long-running mystery. It does not grow in the wild anywhere on the planet, so its ancestry was not at all obvious. Recently, however, the combined detective work of botanists, geneticists and archeologists has been able to identify the wild ancestor of maize, to pinpoint where the plant originated, and to determine when early people were cultivating it and using it in their diets.

The greatest surprise, and the source of much past controversy in maize archeology, was the identification of the ancestor of maize. Many botanists did not see any connection between maize and other living plants. However, a few scientists working during the first part of the 20th century uncovered evidence that they believed linked maize to what, at first glance, would seem to be a very unlikely parent, a Mexican grass called 'teosinte'. Looking at the skinny ears of teosinte, with just a dozen kernels wrapped inside a stone-hard casing, it is hard to see how they could be the forerunners of maize cobs with their many rows of juicy, naked kernels. Indeed, teosinte was at first classified as a closer relative of rice than of maize.



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In order to trace maize's paternity, botanists rounded up more than 60 samples of teosinte from across its entire geographic range in the Western Hemisphere and compared their DNA profile with all varieties of maize. They discovered that all maize was genetically most similar to a teosinte type from the tropical Central Balsas River Valley of southern Mexico, suggesting that this region was the 'cradle' of maize evolution. Furthermore, by calculating the genetic distance between modern maize and Balsas teosinte, they estimated that domestication occurred about 9000 years ago.

These genetic discoveries inspired recent archeological excavations of the Balsas region that sought evidence of maize use and to better understand the lifestyles of the people who were planting and harvesting it. Researchers excavated caves and rock shelters in the region, searching for tools used by their inhabitants, maize starch grains and other microscopic evidence of maize. In the Xihuatotla shelter, they discovered an array of stone milling tools with maize residue on them. The oldest tools were found in a layer of deposits that were 8700 years old. This is the earliest physical evidence of maize use obtained to date, and it coincides very nicely with the time frame of maize domestication estimated from DNA analysis.²⁵

²⁵ Adapted from Carroll (2010).

2.3.8. Food Security

“Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”²⁶

This is the definition that was reaffirmed in the declaration agreed upon by all FAO member states at the World Summit on Food Security in 2009.

The concept of food security is based on the four pillars of availability, access, utilization and stability:

- *Availability*: sufficient quantities of food of appropriate quality are available.
- *Access*: individuals have the necessary resources to acquire nutritious diets.
- *Utilization*: food is consumed with a basic knowledge on nutrition, and adequate use of non-food inputs such as health care, sanitation and water.

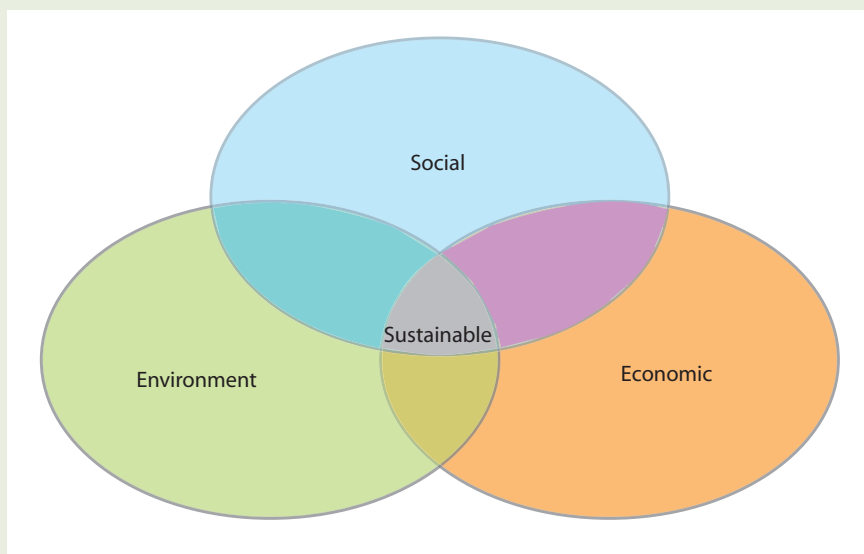
- *Stability*: food availability and access at all times.²⁷

The achievement of global food security is the overall goal of the International Treaty.

2.3.9. Sustainability, Sustainable Development and Sustainable Use of PGRFA

‘Sustainability’ is achieved when current needs are met without compromising future needs. The concept has been implicitly defined by the United Nations, affirming that “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.²⁸ The realization of sustainable development requires an integrated approach to the three interdependent and mutually reinforcing dimensions of environmental protection and economic and social development. They came to be generally known as the three pillars of sustainability.²⁹

Figure 2.3: The Three Pillars of Sustainable Development



²⁶ FAO (2009), p. 1, footnote 1.

²⁷ FAO (2006), p. 1.

²⁸ Brundtland Commission of the United Nations (1987), chapter 2.

²⁹ United Nations General Assembly (2005), para. 48.





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The ‘sustainable use of PGRFA’ is one of the main objectives of the International Treaty. However, it does not define the concept of sustainable use *per se*. For the purposes of the CBD, sustainable use has been defined as the “use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations”.³⁰

It can thus be safely deduced that using PGRFA in a sustainable way implies making

use of crop diversity to meet the food security needs of present generations without compromising the availability of PGRFA as the base of food security for future generations.

However, what makes PGRFA truly unique with regard to most other components of biodiversity is that they need to be continuously used in order to be conserved for the future. The International Treaty therefore proposes a whole set of measures to promote the sustainable use of PGRFA, including, among others, the pursuit of agricultural policies in favour of diverse

Key points to remember:

- Sustainability is achieved when current needs are met without compromising future needs.
- The three pillars of sustainable development are constituted by the three interdependent and mutually reinforcing dimensions of environmental protection and economic and social development.
- PGRFA need to be continuously used in order to be conserved for the future.
- The International Treaty proposes a comprehensive set of measures to Contracting Parties for the promotion of the sustainable use of PGRFA.



³⁰ Convention on Biological Diversity (1992), Article 2.



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farming systems, the promotion of plant breeding efforts and on-farm management of crop diversity.³¹

2.3.10. State Sovereignty and Sovereign Rights over Genetic Resources

‘Sovereignty’ means having supreme authority within a territory. The current notion of state sovereignty goes back to the Treaty of Westphalia (1648); it includes the principles of territorial integrity, border inviolability, and supremacy of the state.³²

‘Sovereign rights’ over natural resources are the rights of independent sovereign states to

legislate, manage, exploit and control access to the natural resources within their borders. They are grounded in the Charter of the United Nations and the principles of international law. The CBD was the first legally binding international agreement to specifically recognize the sovereign rights of states over their own natural resources. The CBD notably affirms the principle that the authority to determine access to genetic resources rests with the national government concerned.³³

Under the International Treaty, countries grant each other facilitated access to their genetic material of a number of the most important crops for food security in the exercise of the sovereign rights that they hold over their genetic resources.

Key points to remember:

- Countries have sovereign rights to legislate, manage, exploit and control access to their natural resources, including PGRFA.
- In the exercise of these sovereign rights, under the International Treaty countries grant each other facilitated access to a number of their most important crops for food security.

³¹ For a more detailed description of the measures to promote sustainable use of PGRFA as proposed by the International Treaty please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

³² Stanford Encyclopedia of Philosophy (2010).

³³ Leskien and Flitner (1997), p. 36.





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2.3.11. Access and Benefit-sharing

‘Access and Benefit-sharing’ (ABS) is a concept to regulate exchanges of a given resource between certain actors. On the international level, the concept was first introduced in 1992 in the domain of genetic resources, with the adoption of the CBD.

The CBD laid down the broad principles that countries are to respect when requesting and granting each other access to their genetic resources. These include that benefits that may arise from the use of such genetic resources be shared in a fair and equitable way with the country granting access – hence the designation ‘access and benefit-sharing’. Such benefits may include non-monetary benefits such as research results, or also possible monetary benefits from the commercialization of a product

that has been developed on the basis of the accessed resource.

With its Multilateral System (see below) the International Treaty has established the first legally binding international ABS mechanism in history which regulates the exchange of a number of the most important crops for food security.

2.3.12. The Multilateral System of Access and Benefit-sharing

The Multilateral System is often simply referred to as MLS. It is the first operational legally binding ABS mechanism on the international level. The Multilateral System can be thought of as a global pool of PGRFA which is shared and managed jointly by all Contracting Parties of the International Treaty.

Key points to remember:

- In the context of genetic resources, ABS is a concept that regulates exchanges of genetic material between a recipient and a provider of such material. It foresees that benefits that may arise to the recipient from the use of the exchanged genetic material be shared in a fair and equitable way with the provider of the material.



Box 2.2: The Nagoya Protocol of the CBD and its Relationship with the Multilateral System of the International Treaty

With its entry into force in 2004 the International Treaty provided the first legally binding mechanism for ABS: the Multilateral System of Access and Benefit-sharing. This Multilateral System facilitates international exchanges of 64 food crops and forages that have been selected according to the criteria of their importance for food security and on the degree of interdependence among countries regarding these crops. They are listed in Annex I of the International Treaty.³⁴ Together, these 64 food crops and forages cover over 80 percent of human nutrition of plant origin. The Governing Body of the International Treaty has the possibility to negotiate the coverage of the Multilateral System to include an even larger range of PGRFA in the future. Furthermore, the CGIAR Centres and other institutions with PGRFA collections, exchange also PGRFA that are not listed in Annex I under the terms of the Multilateral System.

Negotiations on an agreement on ABS that would aim at regulating international exchanges of all – except human – genetic resources, including for purposes other than agriculture, have been launched in the framework of the CBD in 2005. They culminated in October 2010 in the adoption of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (hereafter “Nagoya Protocol”).

The Nagoya Protocol is foreseen to enter into force in 2012. It requires that the countries that adhere to it take legislative, administrative or policy measures to ensure that benefits arising from the utilization of genetic resources are shared upon mutually agreed terms (MAT) in a fair and equitable way with the provider country of these resources. The recipient of the material also has to ensure that the prior informed consent (PIC) of the country granting access to its genetic resources is established. Such measures are to be developed at the national level and may therefore vary from country to country. This implies that generally the terms of exchange would have to be negotiated and agreed on a case by case basis. The Nagoya Protocol provides for the creation of an internationally recognized certificate of compliance to serve as evidence that the genetic resource which it covers has been accessed in accordance with PIC and MAT.

Since the entry into force of the International Treaty, its Multilateral System has been establishing itself as an efficient ABS mechanism in the domain of PGRFA. The existence and functioning of the Multilateral System has therefore been considered in the Nagoya Protocol. In its preamble, the Nagoya Protocol recognizes the interdependence of all countries with regard to PGRFA, as well as the special nature of PGRFA and their importance for food security. In this context, it acknowledges the fundamental role of the International Treaty, recalling notably its Multilateral System.

Article 3*bis* of the Nagoya Protocol makes it clear that, where a specialized international access and benefit-sharing instrument that is consistent with and does not run counter to the objectives of the CBD and the Nagoya Protocol applies, the Nagoya Protocol will not apply for the countries that are parties to the specialized instrument “in respect of the specific genetic resource covered by and for the purpose of the specialized instrument.”³⁵ In the context of PGRFA, concretely, this means that genetic material of the food crops and forages contained in Annex I of the International Treaty fall under the facilitated terms of exchange of the Multilateral System.

³⁴ For an overview of the crops contained in Annex I of the International Treaty see: http://www.planttreaty.org/training/annex1_en.htm.

For more details about the relationship between the International Treaty and the CBD please refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

³⁵ Nagoya Protocol (2010), Preamble, Arts. 3*bis*, 4, 5 and 13.



Key points to remember:

- The Multilateral System of the International Treaty is the first operational legally binding international ABS mechanism in history.
- Within the global gene pool of the Multilateral System the Contracting Parties of the International Treaty grant each other facilitated access to their collections of PGRFA of 64 of the most important crops for food security.
- Crops covered by the Multilateral System are listed in Annex I of the International Treaty.
- The SMTA is the standard contract for exchanges of PGRFA under the Multilateral System.

The crops that form part of this global gene pool are listed in Annex I of the International Treaty. Exchanges of crop genetic material that is part of the Multilateral System are facilitated by a standard contract, the so-called ‘Standard Material Transfer Agreement’ (SMTA). The SMTA regulates the terms under which material can be accessed and to what ends it can be used. It also defines how the resulting benefits of such exchanges will be shared among the Contracting Parties.³⁶

2.3.13. Contracting Parties

The member states of the International Treaty, i.e. the countries that have formally ratified, accepted, approved or acceded to

the International Treaty, are officially called ‘Contracting Parties’.

2.3.14. Governing Body

The Governing Body, often simply referred to as ‘GB’, is the supreme decision-making body of the International Treaty. It consists of the International Treaty’s Contracting Parties. The Governing Body reviews the progress and programme of work of the International Treaty on a biannual basis. It notably provides guidance to Contracting Parties and takes the necessary decisions for the gradual implementation of the International Treaty.³⁷



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³⁶ The Multilateral System is dealt with in Arts. 10-13 of the International Treaty. For more details on the Multilateral System please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

³⁷ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 19.



2.4. Conclusive Summary

The International Treaty is a legally binding international agreement that aims at countering the loss of crop diversity and enhancing the use thereof, with the ultimate goal of achieving global food security. It entered into force in 2004 and by the end of 2010 counted more than 126 Contracting Parties.

The International Treaty relates to all plants that have a value for human nutrition and agriculture. These plants and their component parts are called ‘plant genetic resources for food and agriculture’ or simply ‘PGRFA’. For a number of PGRFA that are most important to global food security, the International Treaty establishes a system that facilitates the access to these resources for agricultural research and breeding activities: the Multilateral System of Access and Benefit-sharing.

As a Contracting Party of the International Treaty, a country allows its agricultural researchers and breeders – including, among others, national gene banks and research institutions, individual breeders and farm-

ers, non-governmental organizations as well as public and private breeding companies – to benefit from the facilitated access to the PGRFA contained in the gene pool of the Multilateral System.

Furthermore, Contracting Parties and stakeholders based within their borders have the possibility to receive an equitable share of the benefits that arise from the use of the material in the Multilateral System. In addition, by participating as a Contracting Party in the decision-making process of the Governing Body of the International Treaty, a country can ensure that its interests related to PGRFA are taken into consideration by the international community.

A number of terms and concepts used repeatedly in the policy area of crop diversity do not have internationally agreed definitions. In the absence of such agreed definitions it is common practice to apply the current everyday understanding for interpretation purposes.³⁸

³⁸ Moore and Tymowski (2005), p. 33.

Furthermore, it falls within the Governing Body’s mandate to agree on additional definitions of terms related to the International Treaty, if needed.



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History of the International Treaty



LESSON 3



Learning objectives

At the end of this lesson, the learner will:

- be familiar with the socio-economic factors that led to the first policy discussions related to plant genetic resources management at the international level;
- be aware of the origins of the International Treaty and its emergence in relation to other multilateral processes; and
- have an overview of the main steps of the negotiation process that led to the adoption of the International Treaty.



Target learner groups

Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Fragaria, strawberry, by Elizabeth Blackwell (1739)

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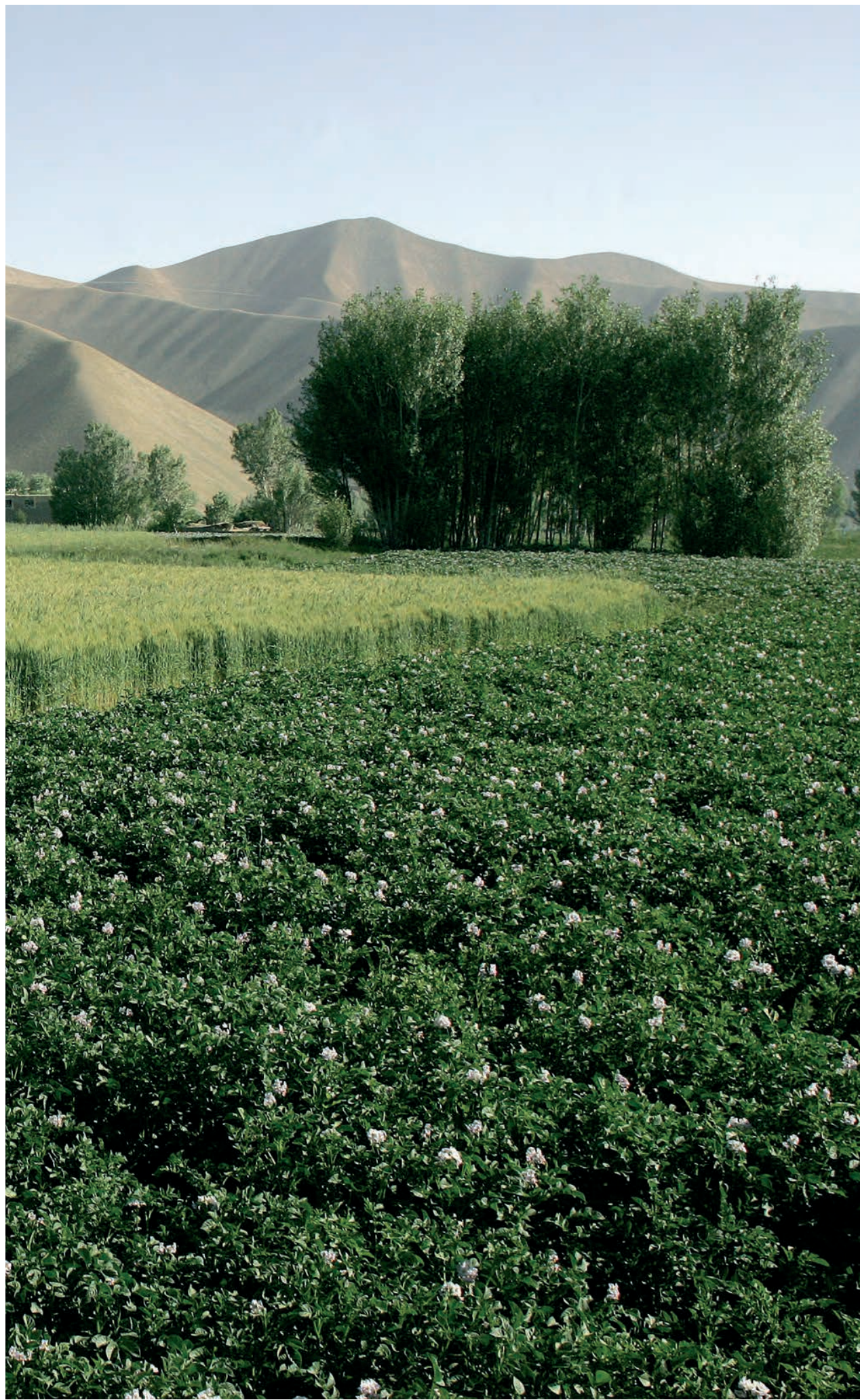
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3.1. Overview of the Lesson

This lesson looks at the sequence of events that led to the adoption of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”).

The international legal framework governing plant genetic resources for food and agriculture (PGRFA) has progressively evolved over time. The International Treaty itself has been adopted by the Conference of the Food and Agriculture Organization of the United Nations (FAO) relatively recently, in 2001, and entered into force in 2004. However, formal negotiations had started a decade earlier, in consequence of more than two decades of previous discussions in policy setting bodies dealing with food security and PGRFA.

This lesson takes the global challenges of the beginning of the second half of the 20th century as a starting point: rapid population growth and food security. In this context, agricultural research and breeding for yield improvements became more important than ever. A first international instrument to promote the conservation of

PGRFA and to facilitate their exchange for global food security was adopted in 1983: the International Undertaking on Plant Genetic Resources (hereafter “International Undertaking”).

The adoption of the Convention on Biological Diversity (CBD) in 1992 called for a revision of the International Undertaking in order to ensure the mutual harmony of the two instruments. The negotiations for this revision took place within the FAO Commission on Genetic Resources for Food and Agriculture (hereafter “Commission”).¹ This lesson provides insights about the negotiation process which culminated in the adoption of the first legally binding international instrument for food security: the International Treaty.

After completion of this lesson, the learner will understand the context in which the International Treaty emerged. It will also help him or her comprehend the respective mandates of certain key instruments and institutions that form part of the international framework governing PGRFA and how they relate to the International Treaty.²

¹ When the Commission was established its mandate was limited to PGRFA and it was named ‘Commission on Plant Genetic Resources’. In 1995, the FAO Conference broadened the Commission’s mandate to all components of biodiversity of relevance to food and agriculture, and its name was accordingly changed to ‘Commission on Genetic Resources for Food and Agriculture’.

² The mandates of some key instruments and institutions that form part of the international policy framework on PGRFA will be the focus of lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).





3.2. The Need for an International Policy Instrument in the Area of Crop Diversity and Food Security

3.2.1. Rapid Increase in World Food Demand due to Population Growth

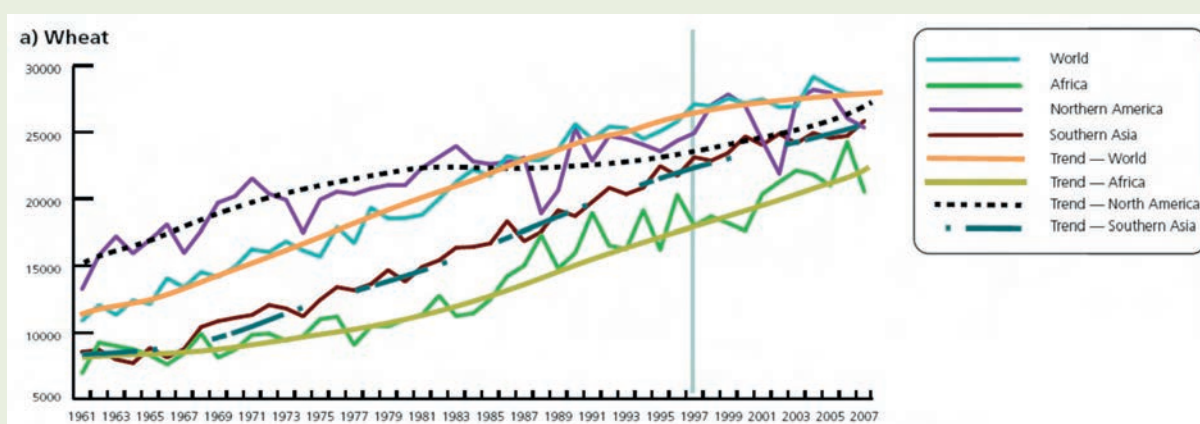
Basic Facts

In the aftermath of the Second World War, major increases in the rate of population growth were experienced around the globe.³ Main factors therefore were that industrialized countries re-established their peacetime economies, and many countries in the developing world gained their political independence. At the same time, improvements in sanitation and medicine increased life expectancy worldwide. It was in this context that terms like ‘population explosion’ and ‘overpopulation’ emerged and global concern about the issue of food security materialized.⁴

The Indian subcontinent, for example, experienced several grave famines during the 1940s when it was still under colonial rule. After gaining its independence, one of the main goals of India was to become self-sufficient in agricultural production in order to meet the food security needs of its steadily growing population and to avoid future famines. Many other countries were facing similar situations.⁵

Consequently, agricultural research focused on ways to increase global yields, especially through the development of higher yielding varieties of major crops such as maize, rice and wheat. An increasing share of official development assistance was invested in agriculture, and the first international agricultural research centres were estab-

Figure 3.1: Average Yields (kg/ha) for Wheat Over the Period 1961-2007



Source: The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.⁶

³ United Nations Secretariat (1999), part 1, p. 3.

Whereas it took world population 123 years to double from one to two billions between 1804 and 1927, it crossed the three billion mark only 33 years later in 1960.

⁴ Global Food Security (2011).

⁵ Gordon (1983), p. 1051.

Notably, during the ‘Bengal famine’ in 1943-1944 it is estimated that around three million people died from starvation and malnutrition in Eastern India alone.

⁶ FAO (2010), p. 188.



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lished.⁷ These international agricultural research centres later joined their forces under the umbrella of the Consultative Group on International Agricultural Research (CGIAR).⁸ They had a leading role in the development of improved crop varieties. New high-yielding crop varieties – together with the introduction of new irrigation techniques, fertilizers and pesticides – made possible what came to be known as

the ‘Green Revolution’. Since 1970 world cereal production has more than doubled, expanding faster than world population growth.⁹

In this context, awareness of the value of crop diversity for food security grew increasingly, and with it awareness on the need for access to plant genetic resources for agricultural research and breeding.

Key points to remember:

- Major increases in the rate of population growth worldwide in the second half of the 20th century led to global concern about the issue of food security.
- In response, countries invested an increasing share of official development assistance in agriculture, and the first international agricultural research centres were established.
- Agricultural research focused on ways to increase global yields, especially through the development of higher yielding varieties of major food crops.
- As a result, grain output has expanded by more than 250 percent in the period from 1950 to 1984, under what has been labelled the ‘Green Revolution’.
- The successes that were achieved under the Green Revolution showcase the value of crop diversity for food security and the importance of access to PGRFA for agricultural research and breeding.

⁷ FAO (2011).

Official development assistance invested in agriculture peaked in 1979 at 17 percent.

⁸ For more information on the CGIAR Centres see Box 3.1.

⁹ FAO (2004), p. 26.

According to Le Buanec, chairman of the 2nd World Seed Conference (2009), about half of this increase in yield is attributable to improved crop varieties, and the other half comes from the shift to new agricultural practices including the use of irrigation, fertilizers and pesticides. For more information related to the 2nd World Seed Conference see: <http://www.worldseedconference.org/>.



Box 3.1: The Consultative Group on International Agricultural Research (CGIAR)

The Consultative Group on International Agricultural Research (CGIAR) is a global partnership that unites organizations engaged in research for sustainable development and donors of their work. The donors include country governments, foundations, and international and regional organizations. The work they support is carried out by the 15 International Agricultural Research Centres (hereafter “CGIAR Centres”), in close collaboration with hundreds of partner organizations, including national and regional research institutes, civil society organizations, academia, and the private sector.

The CGIAR grew out of the international response to widespread concern in the 1950s, 1960s and early 1970s that many developing countries would succumb to hunger. Experts predicted widespread and devastating famine between 1970 and 1985. Such grim predictions were proved wrong by a combination of connected trends: the reorientation of domestic policies in developing countries that were considered particularly vulnerable sharply focused research by scientists in these countries, a great effort by farmers, and the impact of international research on tropical agriculture.

The origins of the CGIAR lie in the Mexico-Rockefeller Foundation International Agriculture Programme, a groundbreaking collaborative venture set up in 1943 at the suggestion of the governments of the US and Mexico, with the strong backing of the Rockefeller Foundation. A team of scientists including Norman Borlaug – who in 1970 received the Nobel Prize for his achievements – focused primarily on increasing the productivity of beans, maize, wheat and potatoes. After several years of research, the programme was able to develop semi-dwarf varieties of high-yielding wheat, with yields three times higher than those of traditional varieties, and Mexico was declared self-sufficient in wheat.

The transfer of knowledge from Mexico to India, where famine was widely anticipated, brought major productivity increases in that South Asian country and elsewhere in Asia. A new rice programme headquartered in the Philippines was inaugurated through the joint efforts of the Ford Foundation and the Rockefeller Foundation. These early efforts led to the establishment of four international agricultural centres: the International Rice Research Institute in the Philippines in 1960, the International Maize and Wheat Improvement Centre in Mexico in 1966, the International Centre for Tropical Agriculture in Colombia in 1967, and the International Institute of Tropical Agriculture in Nigeria in 1967.

However, the foundations were not able, on their own, to support international agricultural research in perpetuity. Hence, they joined forces with the heads of the Food and Agriculture Organization (FAO) of the United Nations, the United Nations Development Programme (UNDP) and the World Bank to persuade influential donors that agricultural research deserved high priority on the international development agenda. This resulted in a series of policy consultations in 1969-1971 to discuss the goals of international agricultural research, financial support for research and a suitable mechanism to harmonize these efforts.

The policy makers and experts involved in these consultations invited the World Bank to set up a consultative group for international agricultural research, similar to other groups that it had created to coordinate and support development in individual countries. The World Bank accepted the challenge and led the effort to create the CGIAR. FAO and UNDP worked with the World Bank as co-sponsors, subsequently joined by the International Fund for Agricultural Development (IFAD).



At its inaugural meeting in May 1971, the CGIAR adopted its *Statement of Objectives, Composition, and Organizational Structure*. This founding resolution committed the CGIAR to:

- examine the needs of developing countries for specialized efforts in agriculture;
- harmonize international, regional, and national efforts to finance and undertake agricultural research;
- provide finance for high-priority agricultural research; and
- undertake a continuing review of priorities.

CGIAR scientists have played a major role in collecting, characterizing and conserving plant genetic resources. Eleven CGIAR Centres together maintain over 650 000 samples of PGRFA in their collections that are accessible under the terms of the Multilateral System of the International Treaty.¹⁰

3.2.2. Awareness of Genetic Erosion in Agricultural Production Systems

Hand in hand with the achievements of the Green Revolution and the raising awareness of the value of crop diversity for food security emerged the realization of the need for action to counter the loss of genetic diversity. In fact, a decrease in the genetic diversity of agricultural crops was first detected at the beginning of the second half of the 20th century. In the 1950s plant breeders began to employ the term ‘genetic erosion’ to indicate

the gradual but serious loss of crop diversity in agricultural production systems.

Thus paradoxically genetic erosion was occurring at the same time as substantial progress was being achieved with regard to the development of improved crop varieties. Recent studies have confirmed that genetic erosion has begun with the large-scale shift from traditional methods to more mechanized and industrial forms of production relying on a smaller number of higher yielding crop varieties.¹¹



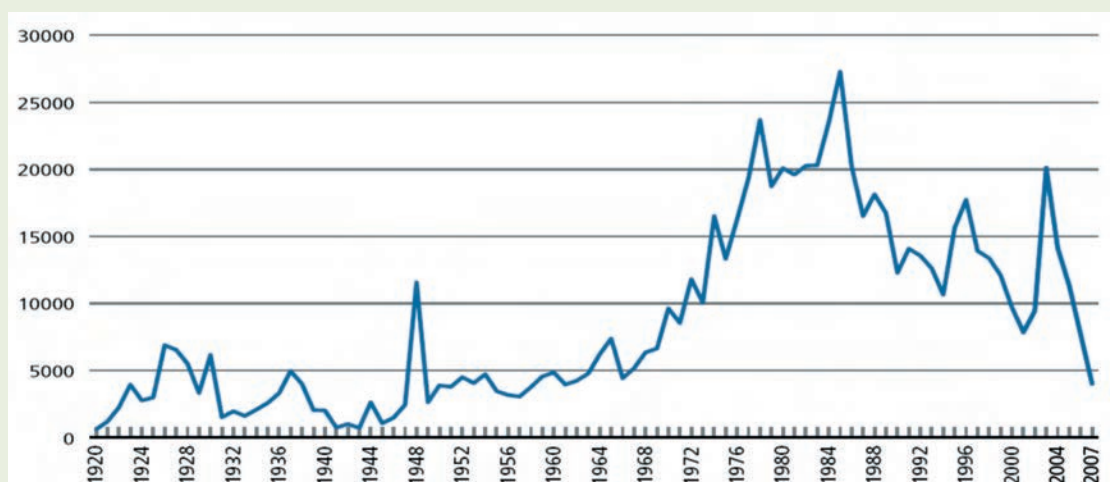
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¹⁰ CGIAR (2011).

¹¹ To learn more about the interlinkages of crop diversity, food security and climate change refer to lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change).



Figure 3.2: Number of Accessions Collected Each Year Since 1920 and Stored in Selected Gene Banks, Including Those of the CGIAR Centres



Source: The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.¹²

Plant genetic resources are the raw material for the breeding of new varieties. Agricultural researchers and plant breeders were thus among the first to realize the severity of the loss of genetic diversity in crops. In response, during the second half of the 20th century the International Agricultural Research Centres of the CGIAR (hereafter “CGIAR Centres”) established international gene banks and carried out collection missions to store as much samples as possible of the existing crop varieties to ensure their conservation for research and use in agriculture.

The gravity of the issue of loss of genetic diversity was for some time obscured by the yield increases achieved in the course of the Green Revolution. Nevertheless, awareness on the direct link between crop diversity and food security rose among political stakeholders over the following decades.¹³

Concerns about access to the remaining diversity of crop varieties for research and breeding were being increasingly voiced within FAO in the early 1980s. One of the main issues raised was the one of ownership of the samples conserved by the CGIAR Centres and other gene banks, and the right to determine their use. It was implicitly understood by the CGIAR Centres that the samples contained in their gene banks were held ‘in trust’, i.e. publicly available for the use of anyone. However, the lack of clear legal regulations on the international level created suspicions, especially from the side of developing countries where much of the material had been collected. In 1981, the FAO Conference finally agreed on the need for an international instrument regulating access to PGRFA and clarifying the legal status of *ex situ* PGRFA collections.

¹² FAO (2010), p. 157.

¹³ Coupe and Lewins (2007), p. 7.

Awareness on the link between crop diversity and food security rose not least thanks to the United Nations Conference on the Human Environment of 1972, also known as ‘Stockholm Conference’, which marked a turning point in the development of international agreements related to the environment and natural resources. To learn more about the Stockholm Conference see:

<http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97>



Key points to remember:

- A decrease in the genetic diversity of crops in agricultural production systems was first detected by plant breeders at the beginning of the second half of the 20th century; they named it ‘genetic erosion’.
- Genetic erosion began with the large-scale shift from traditional methods to more mechanized and industrial forms of agricultural production relying on a smaller number of higher yielding crop varieties.
- In response, the CGIAR Centres carried out missions to collect samples of crop varieties and conserve them in international gene banks for agricultural research and breeding.
- Awareness on the direct link between crop diversity and food security, and in this context on the value of crop diversity, rose also among political stakeholders.
- Concerns about the lack of clear international regulations on access to PGRFA were increasingly voiced within FAO.
- The International Undertaking was adopted in 1983 as the first international agreement dealing with the conservation and the sustainable use of, and notably clarifying the terms of access to, PGRFA.

The result was the adoption of the International Undertaking by the FAO Conference in 1983 – the first international agreement regulating the conservation and the sustainable use of, and notably clarifying the terms for access to, PGRFA.¹⁴ At the same time a

new intergovernmental body with the mandate to monitor and manage the operation of the International Undertaking was created: the Commission on Genetic Resources for Food and Agriculture (hereafter “Commission”).¹⁵



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¹⁴ International Undertaking on Plant Genetic Resources (1983).

¹⁵ *Idem*, Article 9.

See also comment under footnote reference 1 above.



3.3. The International Undertaking - Precursor of the International Treaty

3.3.1. The Main Contents of the International Undertaking

The International Undertaking was the first international instrument dealing with the conservation and sustainable use of agricultural crops and their wild relatives. It was a voluntary – thus not legally binding – agreement by which countries agreed that they would seek “to ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes”.¹⁶

The International Undertaking was based on the then universally accepted principle that plant genetic resources were “a heritage of mankind and consequently should be available without restriction”. In line with that principle, adhering governments and institutions holding plant genetic resources under their control were expected to adopt policies that would allow “access to samples of such resources and to permit their export where the resources have been requested for the purposes of scientific research, plant breeding or genetic resource conservation”. They also agreed that samples should be “made available free of charge, on the basis of mutual exchange or mutually agreed terms”.¹⁷



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¹⁶ International Undertaking on Plant Genetic Resources (1983), Article 1.

¹⁷ *Idem*, Arts. 1+5.

Box 3.2: Crop Diversity and the Principle of Common Heritage of Mankind

Since the beginning of agriculture some 10 000 years ago cultivated plants have been selected and exchanged between peoples and communities within and between all regions of the world. When migrating from one area to another, settlers took their seeds with them to be able to cultivate once they arrived at their new destination. Explorers brought crops they had encountered in newly discovered lands back to their home countries. This continuous exchange and selection of cultivated plants over the millennia has led to an immense legacy of crop varieties, all adapted to the specific conditions of their environments. At the same time a vast proportion of this legacy is derived from a remarkably small number of original species, the dissemination of which has entailed an increasing degree of interdependence on crop genetic material among countries.¹⁸

Against the background of this interdependence, agricultural crops came to be generally perceived as a common heritage of mankind.¹⁹ 'Common heritage of mankind' is a principle of international law which holds that defined territorial areas and elements of humanity's common cultural and natural heritage should be held in trust for future generations. Therefore they should be managed as an international public good and protected from exploitation by individual countries or corporations.²⁰

The principle that PGRFA are a heritage of mankind formed the basis of the International Undertaking. However, there has been some debate on the exact meaning of heritage of mankind and the implications of the application of the principle in the context of PGRFA. Notably, the final text of the International Undertaking does not refer to *common* heritage of mankind, but simply to heritage of mankind. This created scope for diverging interpretations on whether the principle of common heritage of mankind fully applies, and especially on whether PGRFA were to be managed as public goods. However, initial controversies were increasingly settled by means of a set of annexes that have been added to the International Undertaking, and finally by the adoption of the International Treaty.

In addition to the conservation of PGRFA in *ex situ* collections, the International Undertaking also provided for the adoption and maintenance of appropriate legislative and other measures to protect and preserve PGRFA *in situ*, that is to say in areas of their natural habitat. Furthermore, it provided for international cooperation in support of these efforts and envisaged the development of an internationally coordinated network of national, regional and international centres aimed at the establishment of a global system governing PGRFA.²¹

This global system would include the collections of PGRFA held in the gene banks of those centres that form part of the network. In order to ensure that these plant genetic resources are put to the benefit of the international community and accessible based on unrestricted availability, the collections would be placed under the auspices of FAO. The Commission would be in charge of overseeing the operation of this global system.²²

¹⁸ To learn more about countries' interdependence on agricultural crops refer to lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change).

¹⁹ Coupe and Lewins (2007), pp. 3+14.

²⁰ Shackelford (2008).

However, note that no commonly agreed definition of the principle of common heritage of mankind exists.

²¹ International Undertaking on Plant Genetic Resources (1983), Arts. 4, 6+7.

²² *Idem*, Arts. 7+9.



Key points to remember:

- The International Undertaking put forward the principle that PGRFA should be available without restriction for plant breeding and scientific purposes.
- In order to clarify the legal status of the *ex situ* collections of the CGIAR Centres and other gene banks, the International Undertaking provided a legal basis to place such collections under the auspices of FAO for the benefit of the international community, by making them accessible on the basis of unrestricted availability.

The rationale for the creation of an international network of gene banks was notably to clarify the legal status of the *ex situ* collections of the CGIAR Centres and other gene banks. The International Undertaking provided the legal basis for the CGIAR Centres and other gene banks to enter into formal agreements with FAO to place the PGRFA they held in their collections officially under the auspices of FAO.²³

3.3.2. Further Development of the International Undertaking

While the International Undertaking attracted wide support, a number of countries expressed some difficulties that preven-

ted them from adhering to it, or that entailed that they were only able to adhere to it subject to certain reservations. The concerns expressed at the time can be summarized along the following lines:

- Some countries argued that the concept of free availability of PGRFA might be in conflict with certain other international commitments they had entered into, namely the International Convention for the Protection of New Varieties of Plants (hereafter “UPOV Convention”) and the plant breeders’ rights this convention provided for.²⁴
- Some countries expressed the feeling that the global system on PGRFA envisaged by the International Undertaking was somewhat unbalanced. Their argument was that it failed to recognize the important contributions of farmers to the development of PGRFA, while it may allow rewarding the contributions of modern plant breeders through systems of plant variety protection and patents.
- Many countries also argued that any system of PGRFA should more fully reflect the sovereign rights that countries have over their genetic resources.²⁵

In order to overcome these concerns, the FAO Conference, in 1989 and 1991, adopted a series of three annexes to the International Undertaking.

²³ See below (Negotiation of the International Treaty and Entry into Force).

²⁴ Plant breeders’ rights are a form of intellectual property rights granted to breeders of a new plant variety that give them exclusive control over the propagating material and harvested material of that variety for a number of years. To learn more about intellectual property rights in the context of PGRFA and the International Treaty refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

²⁵ The sovereign rights of states over their genetic resources are grounded in the Charter of the United Nations and the principles of international law. To learn more about state sovereignty over PGRFA refer to lesson 2 (Objectives, Scope and Basic Concepts).





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The Annexes to the International Undertaking

The first annex of 1989 – Resolution 4/89 – was the so-called ‘Agreed Interpretation of the International Undertaking’.²⁶ It provided that plant breeders’ rights were, in fact, not incompatible with the International Undertaking, insofar as protected plant varieties would still be available for plant breeding and scientific purposes.

Furthermore, the Agreed Interpretations introduced the concept of Farmers’ Rights by recognizing the enormous contribution of farmers to the conservation and development of PGRFA.

The second annex – Resolution 5/89 – was specifically dedicated to Farmers’ Rights. It endorsed the concept of Farmers’ Rights with the aim to raise awareness about the need to assist farmers in the conservation of the

diversity of crops in their fields and to allow them to participate in the benefits derived from the use of PGRFA. The rationale for these rights grounded in the fact that throughout the history of humanity the majority of PGRFA have been conserved, improved and made available by countless generations of farmers, especially from developing countries.²⁷

In 1991 a third annex – Resolution 3/91 – was adopted by the FAO Conference. It clarified that the principle of heritage of mankind was not in contradiction with the concept of state sovereignty over PGRFA. The annex reaffirms the sovereign rights of states over their PGRFA by recognizing that the concept of heritage of mankind, as applied in the International Undertaking, is subject to state sovereignty. In plain language, this means that countries do not renounce their sovereignty by granting each other unrestricted

²⁶ In practice all three annexes are often jointly referred to as the ‘Agreed Interpretations of the International Undertaking’.

²⁷ The resolution provides that 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, as well as the attainment of the overall purposes of the International Undertaking. To learn more about Farmers’ Rights in the context of the International Treaty please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).





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ed availability to their PGRFA, since they would do so with their explicit agreement.

Thus, the three annexes responded to the concerns certain countries had raised with regards to the International Undertaking. However, negotiations related to access

to genetic resources in general – including PGRFA – and the fair and equitable sharing of benefits arising from their use, soon began to take place in the context of a new international policy instrument: the Convention on Biological Diversity (CBD).²⁸

Key points to remember:

Three annexes to the International Undertaking have been adopted by the FAO Conference in order to clarify some concerns raised by a number of countries:

- Resolution 4/89 provided that plant breeders' rights, such as those under the UPOV system, were compatible with the International Undertaking and recognized the enormous contribution of farmers to the conservation and development of PGRFA.
- Resolution 5/89 endorsed the concept of Farmers' Rights, highlighting the need to assist farmers in the conservation of the diversity of crops in their fields, and to allow them to participate in the benefits that are derived from the use of PGRFA.
- Resolution 3/91 clarified that the principle that PGRFA should be available without restriction for plant breeding and scientific purposes was not in contradiction with the sovereign rights of states over their PGRFA.



²⁸ The entire section 3.3. (The International Undertaking – Precursor of the International Treaty) is adapted from Moore and Tymowski (2005), pp. 6-10.

3.4. The Rio Earth Summit and the Convention on Biological Diversity

The year 1992 saw the organization of a major United Nations Conference held in Rio de Janeiro, Brazil: the United Nations Conference on Environment and Development, better known as the ‘Rio Earth Summit’. The CBD was one of the main outcomes of the Rio Earth Summit, along with the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD) and the Agenda 21.

3.4.1. Objectives and main Contents of the CBD

The text of the CBD was internationally negotiated within the framework of the United Nations Environment Programme (UNEP) at the so-called ‘Nairobi Conference’ earlier in the same year. The CBD was adopted and

opened for signature at the Rio Earth Summit, and entered into force in 1993. It provides a comprehensive legally binding framework whose objectives are the conservation of biological diversity, the sustainable use of its components and the sharing of benefits arising from the use of genetic resources.²⁹ Hence, the scope of the CBD also covers PGRFA.

The CBD formally recognized the sovereignty of states over their natural resources and laid down the principle that the authority to determine access to genetic resources rests with the national government concerned and is subject to its national legislation. However, member states agreed to create conditions to facilitate access to genetic resources for environmentally sound uses and not to impose restrictions that run counter to the objectives of the CBD.³⁰



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²⁹ Convention on Biological Diversity (1992), Article 1.

³⁰ With the CBD the sovereign rights of states over their genetic resources – which grounded in the Charter of the United Nations and the principles of international law – were for the first time formally recognized in an international agreement.



Access to genetic material, where granted, is to be on terms that are mutually agreed-upon between the holders of the material in question and the party that is seeking access. Unless otherwise determined by the party holding the material, access is also subject to its informed consent prior to the acquisition of the material. Measures taken with the aim of sharing benefits between the provider and the user of genetic material, including, *inter alia*, sharing of non-monetary benefits such as research results, as well as monetary benefits from commercialization, are similarly to be on mutually agreed-upon terms.

These criteria for access and benefit-sharing under the CBD are generally known as ‘prior informed consent’ (PIC) and ‘mutually agreed terms’ (MAT). Yet the CBD does not prescribe how exactly compliance with PIC and MAT is to be determined by its member states when exchanging genetic resources. In the absence of any agreed prescription,

the natural tendency for parties wishing to exchange genetic resources has been to adopt a bilateral approach to negotiating access and benefit-sharing.

The bilateral approach does often involve bureaucratic procedures that differ from country to country. Moreover, it exhibits high transaction costs as the terms of access and benefit-sharing need to be negotiated on a case by case basis. However useful a bilateral approach might be in the context of certain types of genetic resources, it has its limitations when the goal is to enhance agricultural research and breeding for the achievement of global food security. This is why during the negotiations of the International Treaty countries have opted for a multilateral solution for access and benefit-sharing that would fulfil the CBD’s conditions of PIC and MAT without the need for case by case negotiations (see further below).³¹



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³¹ After five years of negotiations a comprehensive international agreement on access and benefit-sharing was finally adopted within the framework of the CBD in October 2010 in Nagoya, Japan. In its preamble the Nagoya Protocol acknowledges the fundamental role of the International Treaty and its Multilateral System in the context of PGRFA. In fact, the Nagoya Protocol states that where a specialized international access and benefit-sharing instrument – such as the Multilateral System of the International Treaty – applies, the Nagoya Protocol does not apply for the countries that are members of “the specialized instrument in respect of the specific genetic resource covered by and for the purpose of the specialized instrument.”



Key points to remember:

- The CBD was adopted at the Rio Earth Summit in 1992 and entered into force in 1993.
- The objectives of the CBD are the conservation of biological diversity, the sustainable use of its components, and the sharing of benefits arising out of the use of genetic resources.
- The CBD formally recognized the sovereignty of states over their natural resources and laid down the principle that access to genetic resources is subject to national legislation.
- Thereby, the CBD favours a bilateral approach to exchanges of genetic resources which requires negotiations on the terms of access and benefit-sharing on a case by case basis.

3.4.2. Some Outstanding Matters

For the purpose of access and benefit-sharing, the CBD covers only genetic resources provided by member states that are countries of origin of such resources or that have acquired them in accordance with the CBD. It thus specifically does not cover access to *ex situ* material collected before the entry into force of the CBD. As we have seen above, however, many of the gene bank collections of the CGIAR Centres, as well as national collections, were established before the entry into force of the CBD.³²

The Nairobi Conference, where the text of the CBD was agreed, recognized the need to seek solutions to this and other matters related to the International Undertak-

ing that had not been explicitly dealt with by the CBD.³³ In particular, it called for solutions to be found to the question of access to *ex situ* collections acquired prior to the entry into force of the CBD, and to the question of Farmers' Rights.³⁴ FAO was called upon to strengthen the global system governing PGRFA by bringing the International Undertaking into mutual harmony with the provisions of the CBD, and further elaborating on the recognition of Farmers' Rights. This invitation was taken up by the FAO Conference in 1993, which requested the Director-General of FAO to provide a forum for negotiations for the revision of the International Undertaking.³⁵ These were carried out in the Commission that had been set up ten years earlier in order to oversee the International Undertaking.³⁶

Key points to remember:

- The CBD does not cover access to *ex situ* material collected by the CGIAR Centres and other gene banks before the entry into force of the CBD.
- The Nairobi Conference, where the text of the CBD was agreed, called upon FAO to find solutions to the issue of *ex situ* material not covered by the CBD, to further elaborate on the recognition of Farmers' Rights, and to bring the International Undertaking into harmony with the CBD.
- In 1993, the FAO Conference requested the Director-General of FAO to provide for a negotiation forum for the revision of the International Undertaking.

³² To learn more about the CGIAR Centres' relationship with the International Treaty refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

³³ Secretariat of the Convention on Biological Diversity (2005), pp. 399-408.

³⁴ *Idem*, pp. 406-408.

³⁵ FAO (1993).

³⁶ The entire section 3.4 (The Rio Earth Summit and the Convention on Biological Diversity) is adapted from Moore and Tymowski (2005), pp. 9-14.



3.5. Negotiations of the International Treaty and Entry into Force

The International Treaty was the outcome of the negotiations for the revision of the International Undertaking. In 1993, the Commission established a tentative timetable with the ambitious goal to conclude the negotiations by 1995. However, it would take seven years of intense negotiations in order for the process to culminate in the adoption of the International Treaty.

The result was a legally binding instrument for global food security that carefully bal-

ances the specific needs and priorities of a whole range of stakeholders including governments, agricultural research institutions, gene banks, farmers and breeders. It brings together the interests of industrialized countries that generally emphasize the importance of facilitated access to PGRFA for agricultural research and breeding, and developing countries that are often rich in crop diversity and generally stress the need for fair and equitable benefit-sharing.

Box 3.3: Two Major Processes Launched by the Commission – the State of the World Report and the Global Plan of Action

The Commission was established in 1983 to deal with issues related to PGRFA. Its original mandate was in particular to manage the implementation of the International Undertaking. With the aim of obtaining a proper picture as to how much genetic erosion had already taken place globally, and to develop effective strategies to confront that loss of crop diversity in order to sustain global food security, in 1993 the Commission launched two major processes: the Report on the State of the World's Plant Genetic Resources for Food and Agriculture (hereafter "State of the World Report") and the negotiation of the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (hereafter "Global Plan of Action"). In 1996 the Fourth International Technical Conference on Plant Genetic Resources, held in Leipzig, Germany, adopted the Global Plan of Action and welcomed the State of the World Report as the first comprehensive worldwide assessment of PGRFA.

The development of the Global Plan of Action and the State of the World Report were closely linked. The Commission called for the preparation of a Global Plan of Action that would identify the technical and financial needs for ensuring conservation and promoting sustainable use of PGRFA. As a result, a process was launched whereby more than 150 countries submitted national reports on the state of their PGRFA. These reports formed the basis for the elaboration of the State of the World Report.

This first State of the World Report identified a number of serious gaps and inefficiencies in the conservation and utilization of PGRFA. It showed that crop diversity was being lost both in the fields and in gene banks and that the linkages between conservation of PGRFA and their development and use by plant breeders and farmers were weak. The report further highlighted that the benefits of one of the world's most basic and valuable resources were neither realized to their full potential nor shared in a fair and equitable manner.



The Global Plan of Action contains a set of recommendations and activities which grows logically out of the State of the World Report. It is notably aimed at filling gaps, overcoming constraints and facing emergency situations identified in the State of the World Report. The Global Plan of Action would permit the Commission to recommend priorities and promote the rationalization and coordination of efforts for the conservation and sustainable use of PGRFA at the community, national, regional and international levels. More than 160 countries have adopted the Global Plan of Action in Leipzig and despite its voluntary nature many of them have, in fact, designed their own national programmes according to its priorities. In this sense, the Global Plan of Action has created an international common ground for coordinated action regarding the conservation and sustainable use of PGRFA.³⁷

The five main objectives of the Global Plan of Action are:

1. Conservation of PGRFA as the basis of food security;
2. Promotion of sustainable use of PGRFA to foster development and reduce hunger and poverty;
3. Promotion of fair and equitable sharing of the benefits arising from the use of PGRFA;
4. Assisting countries and institutions to identify priorities for action; and
5. Strengthening of existing programmes and enhancement of institutional capacities.

To reach these objectives the Global Plan of Action lists twenty priority activity areas which are grouped into the four following main sections:

1. *In situ* conservation and development;
2. *Ex situ* conservation;
3. Use of PGRFA; and
4. Institution and capacity building.

The Global Plan of Action is a dynamic instrument for the international coordination of action that is constantly adapted to evolving needs and priorities. The Global Plan of Action is recognized as a supporting component of the International Treaty. The Contracting Parties of the International Treaty notably agree to promote the effective implementation of the Global Plan of Action for their efforts related to the conservation and sustainable use of PGRFA.³⁸ The International Treaty thereby provides its Contracting Parties with the legal basis for implementing the Global Plan of Action. In fact, the Governing Body of the International Treaty often builds its own efforts upon the widely accepted framework of the Global Plan of Action. For example, the priorities for spending resources under the direct control of the Governing Body are derived from the priority activity areas of the Global Plan of Action.³⁹

The Second State of the World Report, assessing trends with regard to global PGRFA since the first edition in 1996, has been released in October 2010. It demonstrates that considerable progress has been achieved over the last decade with regard to the conservation of samples of crop varieties in gene banks. The state of crop diversity in farmers' fields and in natural surroundings, however, remains a cause for concern for a large number of crops in most countries. Many wild relatives of important food crops are likely to disappear over the next decades due to climate change.⁴⁰ In order to accurately reflect such new trends the Global Plan of Action, too, is currently under the process of being updated.

³⁷ For an overview of the coordinated action visit the Global Monitoring System of the Global Plan of Action at: <http://www.pgrfa.org/gpa/selectcountry.aspx>.

³⁸ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 14.

³⁹ For more information about the Funding Strategy of the International Treaty please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

⁴⁰ FAO (2010), chapter 1, pp. 3-22.





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In parallel to the beginning of the revision of the International Undertaking, twelve CGIAR Centres signed agreements with FAO in 1994 in order to place most of their collections under the auspices of FAO. By doing that, the CGIAR Centres formally agreed to hold the materials contained in their collections “in trust for the benefit of the international community”. This was consistent with the idea of an internationally coordinated network of gene bank collec-

tions that had been expressed in the International Undertaking. It notably provided a legal interim solution to the issue of *ex situ* collections not addressed by the CBD, until the revision of the International Undertaking would be completed.⁴¹

3.5.1. Main Steps of the Negotiation Process

The Extraordinary Sessions of the Commission of 1994-1998

Negotiations started in 1994 at the First Extraordinary Session of the Commission. As the aim was to strengthen the global system governing PGRFA, the possibility that the outcome might be a legally binding agreement existed from the outset. This fact both gave the negotiations more importance and rendered them more political.

The first attempt was to remodel the International Undertaking by integrating the three annexes into its main text and then discussing it article by article. However, it soon became clear that it was necessary to

Key points to remember:

- The International Treaty was the outcome of the negotiations for the revision of the International Undertaking.
- In parallel to the beginning of the negotiations in 1994, twelve CGIAR Centres signed agreements with FAO in order to place most of their *ex situ* collections under the auspices of FAO, thereby providing a legal interim solution to the issue of *ex situ* collections not addressed by the CBD, until the revision of the International Undertaking would be completed.

⁴¹ FAO (1994), Annex, p. 5.



focus the discussions on the core elements: the scope of the instrument, the terms for access to PGRFA, and Farmers' Rights. These topics remained the focus during the five Extraordinary Sessions the Commission held between 1996 and 1998.

The idea that the new instrument should relate to all PGRFA soon reached a broad consensus. There was more discordance, however, among countries' negotiating positions regarding the following questions: how exactly was access to PGRFA to be facilitated and should it be facilitated to all PGRFA or only a part thereof? How should the rights of farmers with regard to PGRFA be recognized and realized?

Whereas it seemed to be generally understood that facilitated access to PGRFA was needed to achieve and sustain long term food security, economic interests of countries played an important role in the negotiations and made the process more difficult. Some countries stressed primarily the need of a regime for facilitated access that would allow for the protection of new plant varieties through intellectual property rights in order to favour the development of new varieties and to support

their agricultural research and breeding sectors. Others stressed the importance for countries – and especially the rights of their farmers – to receive a share of the benefits derived from the use of the PGRFA they would agree to grant access to.

The Montreux Meeting and the Chairman's Elements of 1999

In 1998 it seemed that the revision of the International Undertaking had come to a deadlock and it was decided that it was premature to schedule for further Extraordinary Sessions of the Commission. Rather, the Commission now considered it opportune to take some time to reflect, in order to allow countries to analyze the various positions, undertake the necessary consultations, and identify areas for possible compromise, before continuing the negotiations.

With the aim to bring the negotiations back on track, the Chairman of the Commission convened an informal meeting of a group of experts in Montreux, Switzerland, in early 1999. The 'Chairman's Elements' derived from the Montreux meeting proved to be instrumental for the successful finalization of the negotiations.



By stipulating the need for a multilateral system covering an agreed list of crops selected on the basis of food security, interdependence and the collections of the CGIAR Centres, the Chairman's Elements laid down the cornerstones of the International Treaty. They foresaw that facilitated access to this system would be allowed to minimize transaction costs, but would be restricted to food and agriculture use. Any benefit-sharing, it was agreed, could include the transfer of technology, capacity building, the exchange of information and direct funding, but should primarily benefit farmers' interests in developing countries. Crucially, the Chairman's Elements called for the recognition of the contribution of farmers to the conservation and development of PGRFA and declared that the responsibility for realizing Farmers' Rights should rest with national governments and supporting national legislation."⁴²

The Intersessional Meetings of the Contact Group of 1999-2001

In 1999 the Commission decided to integrate the Chairman's Elements into the draft

negotiation text and resume the negotiations on that basis in a smaller so-called 'Contact Group' of some 40 delegations. This Contact Group met six times between 1999 and 2001. At first focusing on the Multilateral System of Access and Benefit-sharing (hereafter "Multilateral System"), the coverage of this Multilateral System, facilitated access within the Multilateral System and Farmers' Rights, the Contact Group step by step prepared all provisions of the future International Treaty.

The Open-ended Working Group on the International Undertaking of 2001

Some last remaining issues, including definitional questions and references to intellectual property rights, were discussed during long night sessions in the Open-ended Working Group on the International Undertaking that convened over the weekend prior to the Thirty-first Session of the FAO Conference. It was also within this Working Group that the name 'International Treaty on Plant Genetic Resources for Food and Agriculture' was officially introduced.



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⁴² Coupe and Lewins (2007), p. 20.



The Adoption of the International Treaty

The International Treaty was adopted on 3 November 2001 by the Thirty-first Session of the FAO Conference. It was approved under Article XIV of the FAO Constitution by a vote of 116 Members in favour with two abstentions – Article XIV requiring a two-thirds majority for the approval of international agreements.⁴³ The adoption brought to an end more than seven years of difficult negotiations that consisted in thoroughly balancing and reflecting the interests and priorities of both developing and developed countries, as well as the different stakeholders of the International Treaty.⁴⁴

The Interim Period

The International Treaty entered into force in the third year after its adoption, on 29 June

2004. In accordance with its provisions, this happened 90 days after the deposit of the fortieth instrument of ratification, acceptance, approval or accession.⁴⁵

Meanwhile, the Commission acted as the interim decision-making committee for the International Treaty (hereafter “Interim Committee”). In fact, the text of the International Treaty had foreseen a number of elements that still needed to be fully developed for its proper functioning. These included the Standard Material Transfer Agreement (SMTA) that is used for exchanges of genetic material in the International Treaty’s Multilateral System, and the Funding Strategy for the effective implementation of the activities under the International Treaty. The first negotiations on these important elements were launched under the framework of the Interim

Key points to remember:

- Formal negotiations for the revision of the International Undertaking started in 1994 at the First Extraordinary Session of the Commission.
- It was a difficult negotiation process in which the economic interests of countries played an important role. In 1998, after four years of negotiations, the process seemed to have reached a deadlock.
- The informal Montreux Meeting of experts in early 1999 and the Chairman’s Elements derived from that meeting brought the negotiations back on track.
- On the basis of the Chairman’s Elements, negotiations on the components of the International Treaty were resumed in a Contact Group of about 40 delegations between 1999 and 2001.
- Finally, after a series of night sessions over some last remaining issues, the finalized new instrument was adopted on 3 November 2001 by the Thirty-first Session of the FAO Conference.
- To highlight the legally binding character of the new instrument, its name was officially changed from ‘International Undertaking’ into ‘International Treaty on Plant Genetic Resources for Food and Agriculture’.

⁴³ Article XIV of the FAO Constitution provides an institutional framework whereby international agreements can be adopted by the FAO Conference and then opened for signature and ratification. Under the terms of Article XIV, the Conference is required to proceed to a vote on the adoption of conventions. The outcome of the vote is equivalent to an adoption by consensus, in that no Member voted against the adoption of the International Treaty.

⁴⁴ For the reports, working documents and information documents of the Extraordinary Sessions of the Commission, the Montreux Meeting, the Intersessional Meetings of the Contact Group and the Open-ended Working Group please refer to the website of the Commission at: <http://www.fao.org/nr/cgrfa/cgrfa-meetings/cgrfa-comm/en/>.

⁴⁵ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 28.



Committee, which carried out this role until 2006, when the Governing Body of the International Treaty (hereafter “Governing Body”) convened for the first time.⁴⁶

The Establishment of the Secretariat of the International Treaty

While the Commission was acting as the Interim Committee for the International Treaty, the Secretariat of the Commission was fulfilling the role of its Interim Secretariat. The International Treaty, however, foresees that it shall have its own Secretary, assisted by a number of staff. Together they would form the Secretariat of the International Treaty, with the main function to provide administrative support for the sessions of the Governing Body and to assist the Governing Body in carrying out its functions.⁴⁷ At its first session in June 2006 the Governing Body adopted the terms of reference for the Secretary of the International Treaty in

order to commence the process for his appointment, and dealt with the matters necessary for the establishment of the Secretariat. In January 2007, Dr Shakeel Bhatti was appointed by the Director-General of FAO as the first Secretary of the Governing Body of the International Treaty.

Key points to remember:

- The International Treaty entered into force on 29 June 2004.
- The Commission acted as the Interim Committee for the International Treaty until the Governing Body of the International Treaty met for the first time in June 2006.
- In January 2007, Dr Shakeel Bhatti was appointed by the Director-General of FAO as the first Secretary of the Governing Body of the International Treaty.



⁴⁶ See lesson 4 of this module (Main Components and Governance of the International Treaty) for more information on the SMTA and the Funding Strategy.

⁴⁷ For more information on the respective roles of the Governing Body and the Secretary see lesson 4 of this module (Main Components and Governance of the International Treaty).



3.6. Conclusive Summary

Awareness of the value of crop diversity for global food security emerged in the aftermath of the Second World War when the world population began to increase dramatically. Agricultural research started to focus on the development of higher yielding crop varieties to cope with the food security challenge. Soon it was recognized, however, that the focus on improved varieties of only few major crops – albeit allowing for the urgently needed significantly higher yields – contributed to the erosion of crop diversity in agricultural production systems. The CGIAR Centres therefore established international gene banks for the conservation of the existing crop varieties for future research and use in agriculture.

Political stakeholders also began to recognize the value of crop diversity for food security and the issue started to be debated on the international level. With the aim of ensuring access to PGRFA for plant breeding and scientific purposes, a first international instrument for the conservation and the sustainable use of PGRFA for food security was adopted within FAO in 1983: the International Undertaking. The International Undertaking was a voluntary international instrument based on the principle that PGRFA are a heritage of mankind and therefore should be made freely available.

With the Rio Earth Summit in 1992 came the adoption of the CBD: a legally binding international instrument for the conservation and the sustainable use of all components of biodiversity – including also PGRFA – and the fair and equitable sharing of the benefits arising out of the use of genetic resources. The CBD formally recognized the principle

that states have sovereign rights over their natural resources. Consequently, it foresees that genetic resources can only be accessed with the prior informed consent of the country holding them and on terms that have been mutually agreed. However, the CBD did not address the legal status of *ex situ* gene bank material that was accessed before its entry into force.

The conference that adopted the CBD invited FAO to provide a forum for negotiations in order to ensure mutual harmony of the International Undertaking and the CBD. Outstanding issues to be dealt with notably included the harmonization of the concept of ‘heritage of mankind’ with the principle of sovereign rights over PGRFA, and the clarification of the status of *ex situ* collections of PGRFA not covered by the CBD.

The International Treaty was the result of the negotiations for the revision of the International Undertaking. It reaffirms the sovereign rights of countries over their PGRFA. In the exercise of their sovereign rights the Contracting Parties of the International Treaty established the Multilateral System for facilitated access and benefit-sharing for a number of those PGRFA that are most important for food security and on which countries are most interdependent for purposes of agricultural research and breeding. For these PGRFA, the terms and conditions of access have been agreed on a multilateral basis as among the Contracting Parties, thus avoiding the need to negotiate terms and conditions of access on a bilateral basis. The Multilateral System ensures that exchanges of PGRFA are in line with the requirements of prior informed consent and mutually agreed





terms of the CBD. The International Treaty also recognizes Farmers' Rights, and it provided a solution to the issue of *ex situ* material not covered by the CBD: concretely, it called upon the CGIAR Centres and other entities holding PGRFA in *ex situ* collections and that have been acquired prior to the entry into force of the CBD to enter into special agreements with the Governing Body. This gave the CGIAR Centres the legal basis to place their collections under the Multilateral System, and to exchange their material in accordance with the provisions of the International Treaty.⁴⁸

The International Treaty is the only legally binding international instrument for food se-

curity that takes into account the special nature of PGRFA and provides specific rules that are adapted to the needs of food and agriculture. Contracting Parties are bound by international law to adhere to the provisions that they have agreed to by adhering to the International Treaty. Thereby, the adoption of the International Treaty has significantly strengthened the global system governing PGRFA, providing it with an overall legal framework. By establishing a system that facilitates access to PGRFA while respecting the sovereign rights of states over their PGRFA, and that is in line with the access and benefit-sharing requirements of the CBD, the International Treaty furthermore ensures mutual harmony with the CBD.

⁴⁸ Please refer to lesson 4 of this module (Main Components and Governance of the International Treaty) for more information on the Multilateral System and Farmers' Rights.

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Main Components and Governance of the International Treaty



LESSON 4



Learning objectives

At the end of this lesson, the learner will:

- be familiar with the main components of the International Treaty;
- be able to name possible policy and legal measures to promote the objectives of the International Treaty at the national level;
- have an overview of the governance structure of the International Treaty; and
- understand the role of the National Focal Points.



Target learner groups

Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Pisum sativum, pea, by Elizabeth Blackwell (1739)

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4.1. Overview of the Lesson

Lesson 1 provides a brief overlook of the importance of the International Treaty's main components for coping with the global challenge of enhancing food security in the context of climate change. The main components are further addressed in the other lessons, where the objectives, scope and basic concepts, as well as the history of the International Treaty, are dealt with. Having studied these lessons, the learner would thus already have acquired a basic sense of the main components of the International Treaty.

Lesson 4, in turn, focuses exclusively on the main components. The agreed framework as contained in the respective provisions of the International Treaty is illustrated for each of them. Major developments since the entry into force of the International Treaty are also presented, notably in the case of the Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”) and the Funding Strategy. In addition, the lesson introduces the governance structure of the International Treaty.

The lesson does not attempt to deal with all provisions of the International Treaty. Rather, it seeks to explain the text in a simplified way. The contents of the provisions that are central to the main components of the International Treaty are therefore grouped and presented according to the following headings:

- Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture;
- Farmers' Rights;
- The Multilateral System of Access and Benefit-sharing;
- The Funding Strategy; and
- Governance of the International Treaty.

After completion of this lesson, the learner will be familiar with the mechanisms and the operation of the main components of the International Treaty, and with the bodies involved in its governance. The lesson also constitutes the basis for the forthcoming educational modules II to V of this series, each of which will be dedicated to the in-depth study of one of the main components of the International Treaty.



4.2. The Main Components of the International Treaty

The International Treaty is a comprehensive but concise instrument. It is comprehensive in the sense that the scope for the achievement of its objectives covers the totality of agricultural crops and their wild relatives and it addresses major global challenges as presented in lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change). At the same time, the text of the International Treaty is a rather short document, containing only 35 articles and two annexes.

One might be puzzled when imagining that such a concise instrument is able to provide for effective mechanisms to tackle the major global challenges of food security and climate change. However, this is possible because the International Treaty can be understood as a ‘framework convention’, in the sense that

not every detail related to its operation was entirely elaborated at the time of its adoption. Instead, Contracting Parties agreed on the basic principles on which the mechanisms were to be constructed, in the understanding that the details would be elaborated in the subsequent deliberations of the Governing Body of the International Treaty (hereafter “Governing Body”).

The Contracting Parties meet at least every two years in the Governing Body. There they take the necessary decisions for the further development of the mechanisms that render the International Treaty effective. While some issues still remain to be addressed, the Governing Body has made substantial progress since the entry into force of the International Treaty in 2004.



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4.2.1. Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture

To ensure that crop diversity is effectively conserved for present and future generations and used in a sustainable way, Articles 5 and 6 of the International Treaty propose non-exhaustive enumerations of measures to Contracting Parties. Contracting Parties commit themselves to integrate such measures into their agricultural policies and rural development programmes.¹

Conservation under the International Treaty

The heading of Article 5 indicates that there is more to conservation of PGRFA than their mere preservation. It reads “Conservation, Collection, Characterization, Evaluation and

Documentation of Plant Genetic Resources for Food and Agriculture”. In accordance with the International Treaty, effective conservation of PGRFA thus comprises all of these aspects.

In a nutshell, conservation is about finding and bringing together samples of as much of the crop diversity as possible that is out there (collection), determining what exactly it is that is out there, i.e. the identification of the crop variety, its origins, and the variation in the population (characterization), identifying the special traits of a given resource, the uses the resource might fulfil and possible threats it might be exposed to (evaluation), and compiling all that information and keeping it accessible together with the resource that is being conserved (documentation).



© CIAT/Neil Palmer

¹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 7. Neither the provisions of Article 5 dealing with conservation nor those of Article 6 dealing with sustainable use of PGRFA contain specific obligations that are enforceable as such. This is because not all Contracting Parties dispose of the same resources and capacities that would allow them to fully implement the required measures to the same degree. Nevertheless, upon ratification of the International Treaty countries commit themselves to pursue its objectives within the limits of their national capacities and to ensure the conformity of their laws and policies with the provisions of the International Treaty.



More concretely, under Article 5 Contracting Parties agree to undertake the following activities:

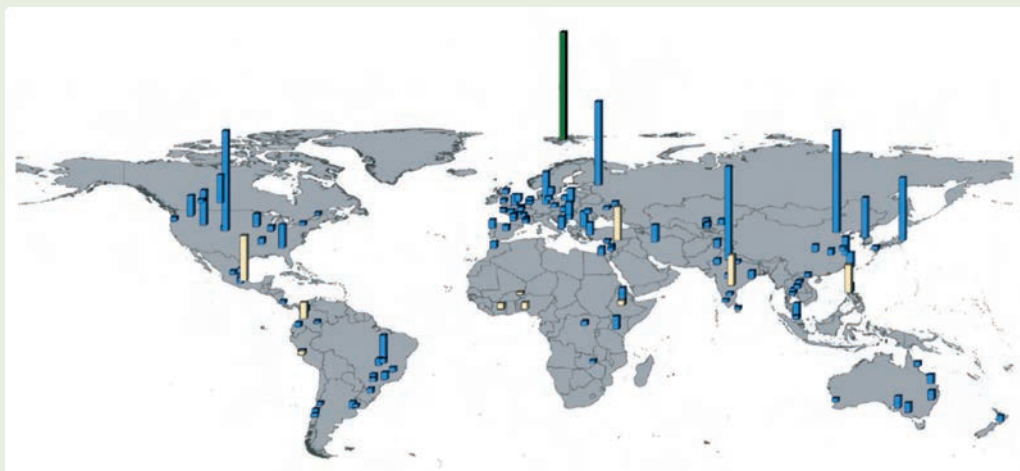
- Surveys and inventories of PGRFA;
- Collection of PGRFA and relevant associated information;
- Promotion of on-farm and *in situ* conservation of PGRFA and their wild relatives;
- Promotion of a system of *ex situ* conservation; and
- Monitoring and maintenance of collections of PGRFA.

The article highlights the importance to approach *in situ* and *ex situ* conservation in a complementary way. While emphasizing the role of farmers, indigenous and local communities for on-farm and *in situ* conservation, it equally underpins the importance of

international collaboration for the establishment of an efficient network of *ex situ* collections.²

Since the entry into force of the International Treaty, substantial progress has been achieved regarding the promotion of an effective system of *ex situ* conservation: in October 2006, the International Agricultural Research Centres of the Consultative Group on International Agricultural Research (hereafter “CGIAR Centres”) entered into agreements with the Governing Body of the International Treaty. Thereby they agreed to place their base collections of PGRFA in the Multilateral System of the International Treaty. In the meantime, many collections of national gene banks and other organizations have also been officially included in the Multilateral System, creating a network that up to date contains more than 1.3 million crop samples.³

Figure 4.1: Geographic Distribution of Gene Banks with Holdings of >10 000 Accessions (national and regional gene banks in blue; CGIAR Centres gene banks in beige; Svalbard Global Seed Vault in green)



Source: The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.⁴

² For short definitions of the terms ‘*in situ*’ and ‘*ex situ*’ please refer to lesson 2 of this module (Objectives, Scope and Basic Concepts). Different conservation techniques and the complementary role of *in situ* and *ex situ* conservation will be explained in lesson 1 of the forthcoming Module II (The Nexus of Conservation and Sustainable Use), and the content and rationale of the provisions of Article 5 will be dealt with in more detail in lesson 2 of that same module (Conservation and Sustainable Use under the International Treaty).

³ For more information on the Multilateral System see 4.2.3 further below.

⁴ FAO (2010), p. 56.



In order to ensure a complementary approach to conservation in the context of the Funding Strategy of the International Treaty (see 4.2.4 below), the Governing Body has made on-farm management and conservation of PGRFA a priority for the disbursement of financial resources under its direct control. The majority of the projects supported by the Benefit-sharing Fund of the Funding Strategy (hereafter “Benefit-sharing Fund”) therefore focus on on-farm and *in situ* conservation.

Sustainable Use under the International Treaty

Neither the concept of ‘sustainability’ nor ‘sustainable use’ are defined *per se* in the text of the International Treaty. According to what is established in lesson 2 of this module (Objectives, Scope and Basic Concepts), however, using PGRFA in a sustainable way – broadly speaking – implies making use of crop diversity to meet the food security needs of present generations without compromising its availability as the base of food security for future generations. Possible uses of PGRFA may include activities

such as agricultural research, breeding and cultivation, and in the broader sense also consumption.

Under Article 6 Contracting Parties agree on adopting measures to promote the sustainable use of PGRFA, including:

- Agricultural policies that promote diverse farming systems;
- Research that benefits crop diversity and farmers;
- Participatory plant breeding;
- Broadening the range of genetic material available to farmers;
- Promotion of locally adapted crops;
- Support of on-farm diversity; and
- Reviewing regulations concerning variety release and seed distribution.

As we can see from these measures, Article 6 has a strong focus on the importance of on-farm management of PGRFA and providing farmers with a broad genetic base of crops, as well as on involving farmers in the breeding of locally adapted crops.⁵



© FAO/Giulio Napolitano

⁵ Lesson 2 of the forthcoming Module II (Conservation and Sustainable Use under the International Treaty) will deal with the International Treaty’s approach to the sustainable use of PGRFA, and explain the content and the rationale of the provisions of Article 6 in a detailed manner.





The implementation of Article 6 is a standing priority item on the agenda of the Governing Body. The Governing Body considers submissions by Contracting Parties, other governments and relevant organizations and institutions with regard to their experiences and progress related to the sustainable use of PGRFA. It does so with the aim of assessing progress and identifying gaps and opportunities with regard to the sustainable use of PGRFA. The Governing Body thereby seeks to facilitate an integrated approach to the sustainable use of PGRFA among Contracting Parties.

The Link of Conservation and Sustainable Use

It is essential to note that the conservation and the sustainable use of crop diversity and its components are intrinsically linked. In the text of the International Treaty this link is provided in the chapeau of Article 5 that reads: “Each Contracting Party shall [...] promote an integrated approach to the exploration, conservation and sustainable use of plant genetic resources for food and agriculture [...]”

The practice of *in situ* on-farm conservation is illustrative to demonstrate the link of conser-

Box 4.1: An Example for the Promotion of *in situ* on-farm Conservation through Community Seed Banks: the GREEN Foundation in India

The GREEN Foundation is a community-based organization that has been working since the early 1990s with about 4200 households spread across 109 villages in Karnataka, India. It aims to preserve and promote crop diversity in this region by conserving seeds of indigenous varieties of plants. In order to do this, the foundation introduced and promoted the concept of community seed banks in conjunction with other organizations working at the grassroots level.

According to the GREEN Foundation, a seed bank is not just a store house where seed is kept for distribution or marketing or a sophisticated storage facility which is controlled for temperature and humidity. It is an important self-help strategy for maintaining genetic diversity in crop and plant species on farms. It is also a system in the process of community agriculture which includes village level facilities, a garden or field where traditional varieties are safeguarded. Through this system, farmers have played a key role in the creation, maintenance and promotion of genetic diversity. They have developed skills to meet their specific needs such as quality, resistance to pests and pathogens, adaptation to soils, water and climate etc. Local farmers have established their own seed networks to facilitate seed supply to their families and local markets.

Seeds are given free of cost to members of a seed bank. Anyone from the community can become a member by paying a nominal annual fee. The member then sows the seed, harvests the crop, and returns to the seed bank twice the quantity he received to replenish the store. The seed banks are managed by women's groups. The women have the capacity to select the seeds, store the seeds and maintain the germination to the level of improving their performance. Their work involves the process of seed mapping, which is to gather information about the varieties of seeds that have become extinct or fallen into disuse and collecting small quantities of them. The foundation then multiplies these seeds by growing them on small plots of land and setting up seed banks.

Among the various methods adopted by the foundation for this purpose, *in situ* on-farm conservation involves distribution of seed diversity among farmers, monitoring it using cards and then collecting them after the season. Seed bank registers, monitoring cards and *in situ* farmers' lists are maintained as part of the conservation activity.⁶

⁶ Box 4.1 is adapted from Centre for Education and Documentation (2009).
For more information on the Green Foundation see: <http://www.greenconserve.com/>

vation and sustainable use. Through on-farm management crops are conserved by being cultivated in farmers fields, notably in the agricultural ecosystems where they have evolved. Thereby, on-farm conservation allows crops to adapt to local conditions by being constantly exposed to them.

Ex situ conservation can be seen as a safety backup measure on the one hand, and a measure to facilitate research and breeding of new varieties on the other hand. In case a certain variety is wiped out by a natural disaster, for example, it can be reintroduced and used again if it has been stored in a safe gene bank facility. In addition, most international and national agricultural research institutions and public and private organizations maintaining collections of germplasm in *ex situ* conditions do so for activities including characterization, evaluation and documentation of the material, as well as for the breeding of improved varieties. Furthermore, germplasm cannot be stored in a gene

bank forever; it has to be renewed regularly after a certain period of time to ensure it maintains its germination capacity. This entails equally that in the meantime it needs to be cultivated, i.e. used.

In this sense, conservation and sustainable use of PGRFA are truly two sides of the same coin. As long as crop diversity continues to be used in a sustainable way, both for cultivation in the fields and for research in the labs, its use will ensure its conservation. On the other hand, active conservation efforts – especially of underutilized crop varieties – make sure that crop diversity remains available for future use.

What makes PGRFA truly unique with regard to other natural resources and most other components of biodiversity is that they are not depleted through overuse, quite on the contrary: they need to be continuously used in order to be conserved for the future.



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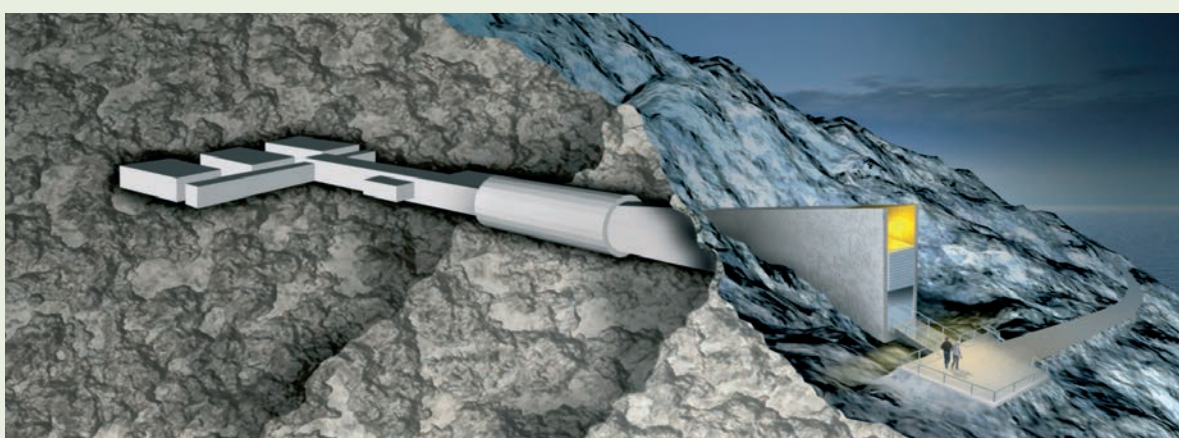


Box 4.2: The Svalbard Global Seed Vault - a Leading Initiative for long-term Safety Conservation

The Svalbard Global Seed Vault (hereafter “Seed Vault”) was officially opened on 26 February 2008, to serve as the ultimate safety net for one of the world’s most important natural resources: plant genetic resources for food and agriculture.

The world’s seed collections are vulnerable to a wide range of threats - civil strife, war, natural catastrophes, and, more routinely but no less damagingly, poor management, lack of adequate funding, and equipment failures. Unique varieties of our most important crops are lost whenever any such disaster strikes: securing duplicates of all collections in a global facility provides an insurance policy for the world’s food supply.

The Seed Vault is dug into a mountainside near the village of Longyearbyen, Svalbard. Svalbard is a group of islands nearly a thousand kilometres north of mainland Norway. For nearly four months a year the islands are enveloped in total darkness. Permafrost and thick rock ensure that, even without electricity, the samples remain frozen.



© Global Crop Diversity Trust

The Seed Vault’s construction was funded by the Norwegian government as a service to the world, and Norway also contributes an annual sum towards its operation. The Seed Vault is managed in partnership between the Global Crop Diversity Trust (hereafter “Crop Trust”), the Nordic Genetic Resource Centre (hereafter “NordGen”) and the Government of Norway.

The Seed Vault is an essential component of the Crop Trust’s activities that aim at strengthening the global system of *ex situ* conservation for the diversity of all our crops. The Crop Trust is therefore committed to supporting ongoing operational costs, and is assisting developing countries with preparing, packaging and transporting samples of unique accessions from their gene banks to the Arctic. As of May 2010 the Seed Vault held over 500 000 samples.

All seeds stored in the Seed Vault remain the property of the country or institution which sent them. There is no change of ownership; though, in any case, any seeds accepted for storage at the Seed Vault must be freely available under the terms of the International Treaty. In other words, there are no seeds stored at the Seed Vault which would not be easily accessible simply by directly contacting the gene bank which sent them.

These institutions send their seed collections to the Seed Vault in order to benefit from the safety and insurance it provides - storing seeds in the Seed Vault is entirely free to them, and voluntary. The depositing institution signs a contract with NordGen. In fact, neither the managers of the Seed Vault, Norway, the Crop Trust, nor anyone else has any right even to open the boxes in which the seeds arrive and are stored. Information about which countries have sent seeds, and the seeds which are already stored in the Seed Vault, is all public.⁷

⁷ Adapted from Global Crop Diversity Trust (2011).

Key points to remember:

- ‘Conservation’ under the International Treaty comprehends also collection, characterization, evaluation and documentation of PGRFA.
- Article 5 highlights the importance of a complementary approach to *in situ* and *ex situ* conservation.
- The international network of *ex situ* collections under the Multilateral System up to date contains more than 1.3 million crop samples. The network brings together the collections of the CGIAR Centres, national gene banks and other organizations that hold PGRFA.
- *In situ* on-farm management of PGRFA is a priority for the disbursement of funds for projects that are supported by the Benefit-sharing Fund.
- The provisions on sustainable use of PGRFA contained in Article 6 propose measures for the promotion of agricultural policies, legislations, research and breeding activities, among others.
- The provisions on sustainable use of PGRFA highlight the importance of on-farm management of PGRFA and the role of farmers.
- The implementation of Article 6 is a standing priority item on the agenda of the Governing Body to assess progress and identify gaps and opportunities with regard to the sustainable use of PGRFA.
- The conservation and the sustainable use of PGRFA are intrinsically linked: in order to be conserved for the future, PGRFA need to be continuously used.

4.2.2. Farmers’ Rights

For the first time in history the efforts and the enormous contribution of farmers – including local and indigenous communities – worldwide to the development and conservation of crop diversity has been recognized in an

international legally binding instrument, through Article 9 of the International Treaty. The International Treaty advises Contracting Parties to take measures to protect and promote Farmers’ Rights in accordance with national laws, and provides farmers a basis to advocate their rights.



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Before the adoption of the International Treaty, in the absence of an internationally agreed common ground, the concept of Farmers' Rights has come to mean different things to different people and across world regions. While some were associating it with a desire for a new form of intellectual property rights for farmer-developed materials at first, to others it was more of a political slogan seeking recognition of farmers' contributions to the conservation and sustainable use of PGRFA and support for their activities in this regard. To many it meant also to protect the ability of farmers to continue conserving PGRFA and using them in a sustainable way, and enabling farmers to take an active part in decision-making related to crop diversity.⁸

Article 9 clarifies the issue by providing the internationally agreed common ground

that was lacking prior to the adoption of the International Treaty. It notably provides the following list of measures for Contracting Parties to take at the national level for the protection and promotion of Farmers' Rights:

- The *protection of traditional knowledge* relevant to PGRFA;
- The *right to participate in the sharing of benefits* arising from the use of PGRFA; and
- The *right to participate in decision-making* related to PGRFA.

This list of measures is a non-exhaustive, indicative list. Important to note, however, is the clear statement in Article 9 that the realization of Farmers' Rights falls under the responsibility of national governments, and the adoption of the above and other measures

Box 4.3: The Linkages between Traditional Knowledge and Food Security

Millions of traditional farmers and indigenous and local communities use their traditional knowledge to ensure food and livelihood security in a wide range of ecosystems, including fragile and harsh ones. Traditional practices are related to cultural traditions and biocultural dynamics and can regenerate local food systems while increasing socio-environmental sustainability and resilience. Such practices can also be applied in innovative ways to help tackle today's problems.

Worldwide, 2.5 billion people derive their livelihoods from agricultural resources; 900 million poor people live in rural areas and 720 million – 400 million of whom are indigenous peoples – directly depend on agriculture and related activities. Traditional knowledge of food and agriculture has existed for millennia, and has evolved over the last 10 000 years with the domestication of plants and animals and the development of agriculture.

Many rural peoples have generated traditional knowledge related to the thousands of indigenous crop and plant varieties, animal breeds, landraces and wild species that they use as food, medicine and other products to ensure food and livelihood security. Today, throughout the world, 10 000 cultures and 6900 languages are involved in thousands of traditional knowledge systems. Traditional knowledge is maintained by experts and non-experts in local communities; it is held, owned and developed both collectively and individually; and it is transmitted through written, oral and non-verbal means among and within cultures, generations, population groups, communities, households and individuals.

The concept of Farmers' Rights is intrinsically linked to the traditional knowledge of farmers and indigenous and local communities. The International Treaty is the first international legally binding instrument that endorses these rights and acknowledges the enormous contribution of local and indigenous communities and farmers of all world regions to the conservation and development of PGRFA.⁹

⁸ Fowler (1997).

⁹ Adapted from FAO (2009), p. 3.



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for the promotion of Farmers' Rights remains thus at the discretion of national authorities.

In addition to these measures, the importance of the rights of farmers to save, use, exchange and sell farm-saved seed is affirmed in the preamble of the International Treaty. However, the provisions of Article 9 are neutral with respect to this so-called 'farmers' privilege'. The International Treaty acknowledges that farmers may have such rights in certain national settings, and reaffirms that where farmers do have these rights, there is no way that they could be limited by the provisions of Article 9.¹⁰

Farmers' Rights as laid down in Article 9 are backed by other provisions of the International Treaty, including the preamble and a number of the measures proposed for the promotion

of the conservation and the sustainable use of PGRFA that were summarized in the previous section. Certain provisions linked to benefit-sharing under the Multilateral System and to the Funding Strategy are also supportive of Farmers' Rights. These will be presented in the subsequent sections.¹¹

The Secretary of the International Treaty (hereafter "Secretary") compiles views on Farmers' Rights and experiences with their implementation by Contracting Parties and other relevant organizations for the consideration of the Governing Body.¹² A number of Contracting Parties have expressed uncertainty about how to best implement Farmers' Rights. To facilitate the exchange of views and experiences among stakeholders and Contracting Parties the Governing Body has decided to convene consultations on Farmers' Rights.¹³

¹⁰ Adapted from Moore and Tymowski (2005), p. 15.

¹¹ Notably Arts. 5.1c), 5.1d), 6.2b), 6.2c), and 6.2d) in the context of conservation and sustainable use; 12.3e), 13.2b)iii), 13.2d), and 13.3. in the context of the Multilateral System; and 18.5 in the context of the Funding Strategy.

¹² Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009a).

¹³ More information on the historical background of the concept of Farmers' Rights and its evolution under the International Treaty, as well as national experiences with the implementation of Farmers' Rights, will be provided in the lessons of the forthcoming Module III.



Key points to remember:

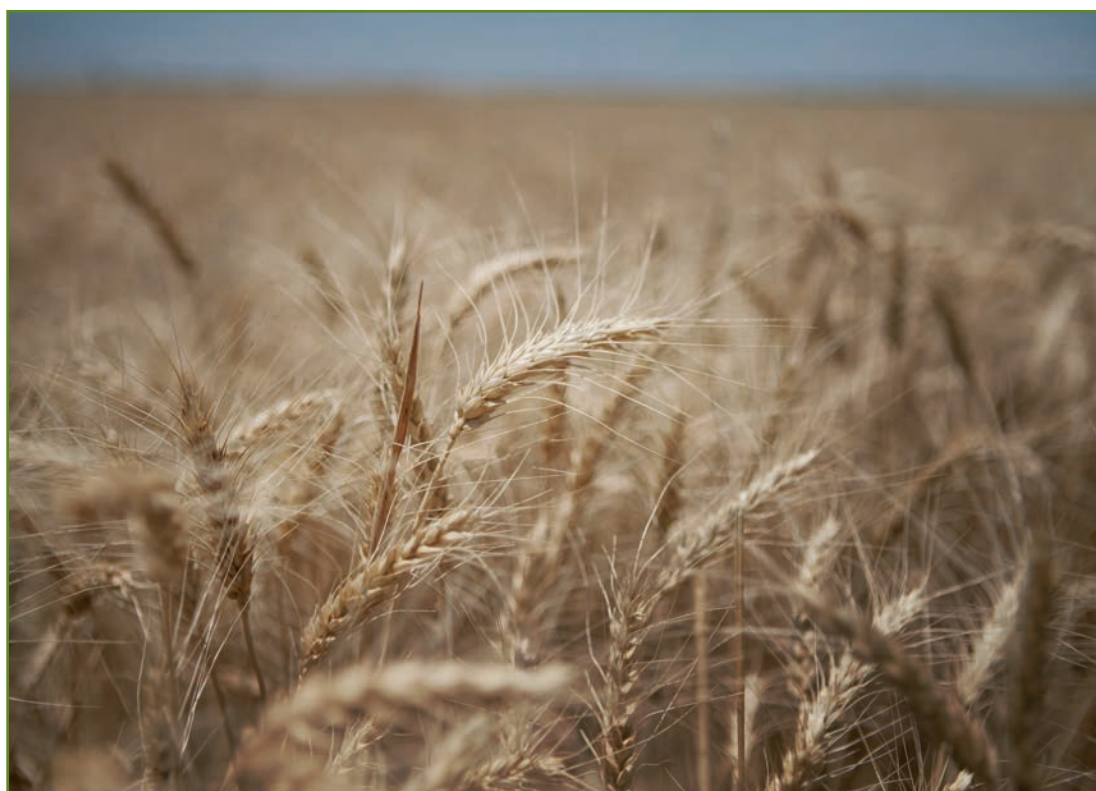
- The International Treaty is the first legally binding international instrument that recognizes the enormous contribution of local and indigenous communities and farmers worldwide to the development and conservation of crop diversity.
- Farmers' Rights under Article 9 include measures for the protection of local and indigenous communities' and farmers' traditional knowledge relevant to PGRFA, their right to share in the benefits arising from the use of PGRFA, as well as their right to participate in decision-making related to PGRFA.
- The realization of Farmers' Rights falls under the responsibility of national governments.

4.2.3. The Multilateral System of Access and Benefit-sharing

The Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”) constitutes the core mechanism of the International Treaty. It is instrumental to achieving the objectives of the International Treaty – both the conservation and the sustainable use of PGRFA, as well as the fair and equitable sharing of benefits arising from their use. The entire part IV of the International Treaty, i.e. Articles 10-13, is dedicated to the Multilateral System.

A Global Gene Pool for the Benefit of Humanity

The Contracting Parties of the International Treaty have created the Multilateral System in the framework of which they grant each other facilitated access to a number of their most important food crops and forages. The Multilateral System can be thought of as a global pool of PGRFA shared and managed jointly by all Contracting Parties of the International Treaty, and from where PGRFA can be obtained on standardized terms. A standard contract (the ‘Standard Material Transfer Agreement’, hereafter



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Box 4.4: Sovereign Rights over PGRFA

Countries have sovereign rights over their PGRFA. Sovereign rights over PGRFA are grounded in the Charter of the United Nations and the principles of international law, and formally recognized in the CBD.¹⁴ The fact that the Contracting Parties of the International Treaty grant each other facilitated access to a number of the most important crops for food security by including them in the Multilateral System does not mean that they renounce their sovereign rights over these resources. Rather, they make use of their sovereign rights to place their PGRFA in the Multilateral System for the benefit of the international community.¹⁵ Both the Multilateral System and the CBD do thus equally respect countries' sovereign rights over their PGRFA.¹⁶

“SMTA”) has been adopted by the Governing Body to regulate transfers of material that is contained in this global gene pool. The SMTA provides transparent regulations that guarantee legal security in exchanges of PGRFA. It thereby prevents misuse of the material that is exchanged and ensures that the benefits that arise from commercial use of material from the Multilateral System will be shared in a fair and equitable way among Contracting Parties.

This global gene pool, however, is not physically located in one single place in the world. On the contrary, it is a global network of international and national gene banks and other institutions that hold PGRFA – a virtual gene pool so to speak.

Coverage of the Multilateral System

Whereas the scope of the International Treaty as a whole comprehends the conservation and the sustainable use of all PGRFA, the coverage of the Multilateral System is limited to the genetic material of 64 food crops and forages. These crops are listed in Annex I of the International Treaty and are

therefore generally referred to as ‘Annex I-crops’.¹⁷

The list of Annex I-crops has been defined according to the following two criteria:

- their importance for global *food security*; and
- *interdependence*: the degree on which countries depend on genetic material of a given crop from other countries and regions for their agricultural research and breeding activities.¹⁸

Globally, the crops contained in Annex I provide for more than 80 percent of human calorie intake from plants.¹⁹ The International Treaty being a legally binding international instrument, also the Annex I list of course needed to be negotiated and agreed-upon by all Contracting Parties in a spirit of compromise. It is for this reason that some crops of importance to food security, such as soy bean and tomatoes, are not included in Annex I. It is important to note, however, that the coverage of the Multilateral System is not carved in stone; it lies within the Governing Body's capacities to re-open negotiations on the crops to be included in Annex I.

¹⁴ Convention on Biological Diversity (1992), Article 3.

¹⁵ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 10.

¹⁶ To read more about the role of the CBD in the evolution of the International Treaty see lesson 3 of this module (History of the International Treaty). For more detail about the cooperation between the International Treaty and the CBD refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

¹⁷ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Arts. 3+11.

To consult the list of Annex I-crops see: http://www.planttreaty.org/training/annex1_en.htm

¹⁸ *Idem*, Article 11.

For a more detailed explanation of the term ‘interdependence’ see lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change).

¹⁹ Grugel (2009), p. 4.





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Contracting Parties commit to include in the Multilateral System all PGRFA listed in Annex I that are under their management and control and in the public domain (e.g. material stored in national gene banks). Further, they invite other holders of PGRFA within their jurisdiction, including natural and legal persons (e.g. individuals, civil society organizations and the private sector) to include their Annex I-material in the Multilateral System. In addition to that, the Annex I-material held by the CGIAR Centres and other international institutions that enter into special agreements with the Governing Body forms also part of the Multilateral System.

The main contributors to PGRFA to the Multilateral System up to date are the CGIAR Centres, a number of other international institutions, national gene banks of Contracting Parties and also some natural and legal persons. At the time of writing this lesson the Multilateral System already contained

over 1.3 million samples of germplasm, and 600-800 samples were exchanged under the terms of the International Treaty on a daily basis.²⁰

Facilitated Access to PGRFA

Agricultural researchers and breeders – including, among others, national gene banks and research institutions, individual breeders and farmers, non-governmental organizations as well as public and private breeding companies – can all benefit from facilitated access to the plant genetic material that has been placed in the gene pool of the Multilateral System.²¹

Conditions Related to Transfers of PGRFA from the Multilateral System

The material can only be accessed for the purpose of utilization and conservation for research, breeding and training activities related to food and agriculture. The use of material to other ends, such as chemical or



²⁰ For more detailed information regarding the inclusion of PGRFA collections see: http://www.planttreaty.org/inclus_en.htm.

²¹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 12.2.



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pharmaceutical research, is not allowed.²² If any, only minimal costs, such as shipping costs, are to be charged by the provider of the material. In addition, the provider has the obligation to make associated descriptive data available together with the plant genetic material to the recipient.²³ Recipients, in turn, cannot claim any intellectual property right on the material in the form that they have received it from the Multilateral System, nor on any genetic part or component thereof. In the case that recipients conserve the material they are bound to continue to make it available to subsequent users.²⁴

Regulation of Transfers of PGRFA

The Governing Body has adopted a standard contract to regulate transfers of PGRFA, the above-mentioned SMTA. The SMTA is a pri-

vate bilateral contract under international law between a provider and a recipient of PGRFA that are part of the Multilateral System. It includes the above conditions regarding access and use of PGRFA, and defines the terms under which the monetary benefits that may arise from the commercial use of the material are to be shared within the Multilateral System. The terms for benefit-sharing under the SMTA are dealt with below.²⁵

Benefit-sharing under the Multilateral System

In its Article 13 the International Treaty foresees several options for both monetary benefit-sharing arising from the commercialization of material accessed from the Multilateral System and non-monetary forms of benefit-sharing. The Contracting

²² International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 12.3a).

²³ *Idem*, Articles 12.3b) and 12.3c).

²⁴ *Idem*, Articles 12.3d) and 12.3g).

The Governing Body has not yet decided on an agreed meaning of “in the form received”. The issue of under what conditions a plant genetic resource for food and agriculture originating from the Multilateral System can be protected by a form of intellectual property has therefore not been conclusively dealt with yet.

²⁵ Lesson 3 of the forthcoming Module IV (The Standard Material Transfer Agreement) will provide detailed information on how to use the SMTA.





Parties have agreed that such benefits should flow primarily to farmers in developing countries who promote the conservation and sustainable use of PGRFA.²⁶

*Mechanisms for non-monetary benefit-sharing include:*²⁷

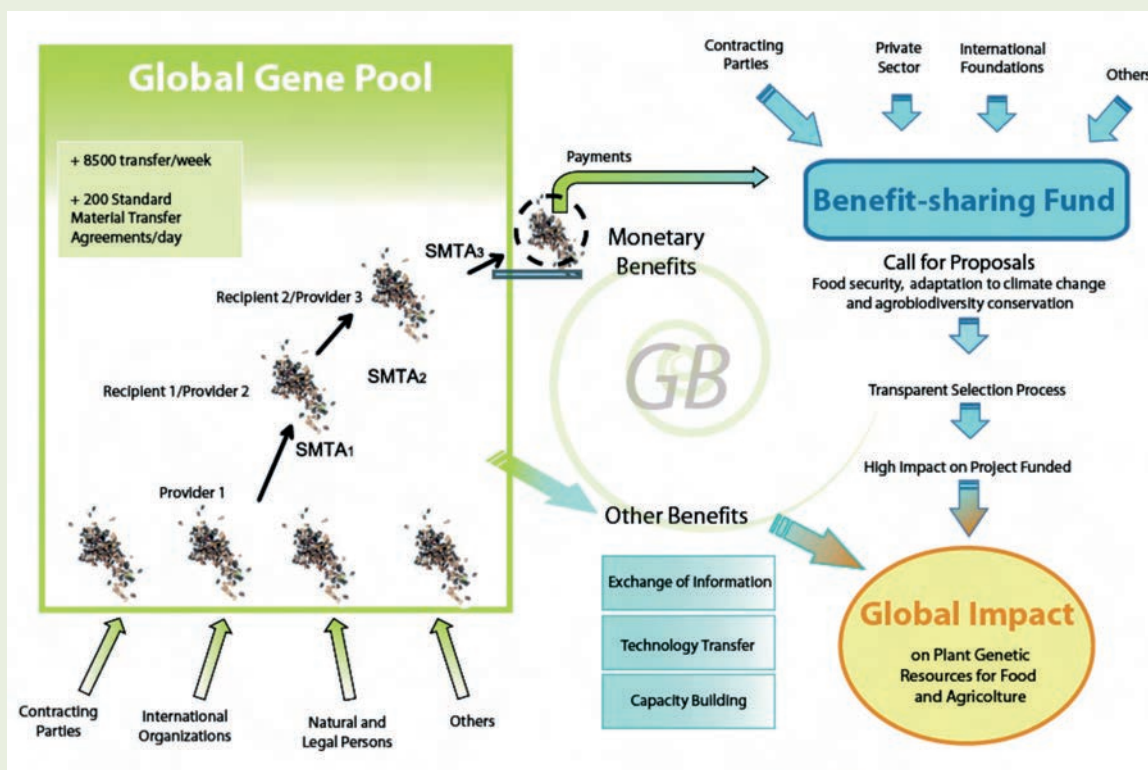
- *Exchange of information* related to PGRFA, such as inventories, information on technologies and relevant research results;
- *Access to and transfer of technology* for the conservation and sustainable use of PGRFA that are part of the Multilateral System; and
- *Capacity-building* in developing countries, primarily related to conservation and sustainable use of PGRFA, including through developing and strengthening facilities for those purposes, and carrying out scientific research.

Monetary benefit-sharing from commercialization

Anyone who commercializes a new crop variety that incorporates traits from plant genetic material originating from the Multilateral System is encouraged to pay an equitable share of commercial profits from subsequent use into the Benefit-sharing Fund. The Benefit-sharing Fund is part of the Funding Strategy which will be dealt with below.

In the case that the new variety is no longer made available to others for further research and breeding, the payment of a share of the profits into the Benefit-sharing Fund becomes mandatory. This would happen, for example, if the breeder has taken out a patent on the new material that does not allow for facilitated access according to the terms

Figure 4.2: Flow of Material and Benefits within the Multilateral System



²⁶ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 13.3.

²⁷ *Idem*, Articles 13.2a), 13.2b) and 13.2c).

of the International Treaty. The share of the profits which has to be paid into the Benefit-sharing Fund in such a case is determined in the SMTA the provider and the recipient of the original material from the Multilateral System have entered into at the moment of the transfer of the material. It is generally 1.1 percent of net sales less 30 percent, which comes down to 0.77 percent of gross sales.²⁸

The forthcoming Module IV of this series will provide an in-depth analysis of the different aspects and the operation of the Multilateral System.

4.2.4. The Funding Strategy

The International Treaty creates a funding strategy to facilitate the mobilization of financial resources for the realization of its objectives (hereafter “Funding Strategy”). The Funding Strategy notably aims at supporting Contracting Parties in their efforts of implementing the national measures required to meet the International Treaty’s objectives. It was adopted at the first session of the Governing Body in 2006, based on Article 18 of the International Treaty.²⁹

Key points to remember:

- Articles 10-13 deal with the Multilateral System.
- The Multilateral System can be thought of as a global pool of PGRFA shared and managed jointly by all Contracting Parties.
- Under the Multilateral System, Contracting Parties grant each other facilitated access to their PGRFA of 64 of the most important food crops and forages for food security.
- The food crops and forages covered by the Multilateral System are listed in Annex I of the International Treaty.
- The list of Annex I-crops has been established according to the criteria of food security and interdependence.
- Annex I-crops provide for more than 80 percent of human calorie intake from plants.
- Contracting Parties include the collections of PGRFA from Annex I-crops they hold in national gene banks into the Multilateral System, and invite other institutions and organizations to do the same.
- The collections of the CGIAR Centres have also been included in the Multilateral System.
- Currently, the Multilateral System contains over 1.3 million samples of PGRFA.
- The SMTA is a standard contract for the transfer of PGRFA from Annex I-crops between providers and recipients.
- All users of PGRFA from the Multilateral System are encouraged to share their benefits with the Multilateral System.
- The International Treaty foresees options both for monetary and non-monetary benefit-sharing. Non-monetary benefit-sharing include information exchange, technology transfer and capacity building.
- Monetary benefit-sharing becomes mandatory when users develop a new variety that contains PGRFA obtained from the Multilateral System and they decide not to make the genetic material of this new variety again available through the Multilateral System for further agricultural research and breeding.

²⁸ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 13.2d)ii).

For the text of the SMTA see: <ftp://ftp.fao.org/ag/agp/planttreaty/agreements/smta/SMTAe.pdf>.

Please note that the SMTA allows also for an alternative payment scheme with a discounted rate of 0.5 percent during a fixed period of 10 years. Under this option the rate applies to all sales of PGRFA that belong to the same crop as the one obtained under the SMTA, regardless of whether or not they continue to be available for further research and breeding (see Article 6.11 and Annex 3 of the SMTA).

²⁹ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2006).



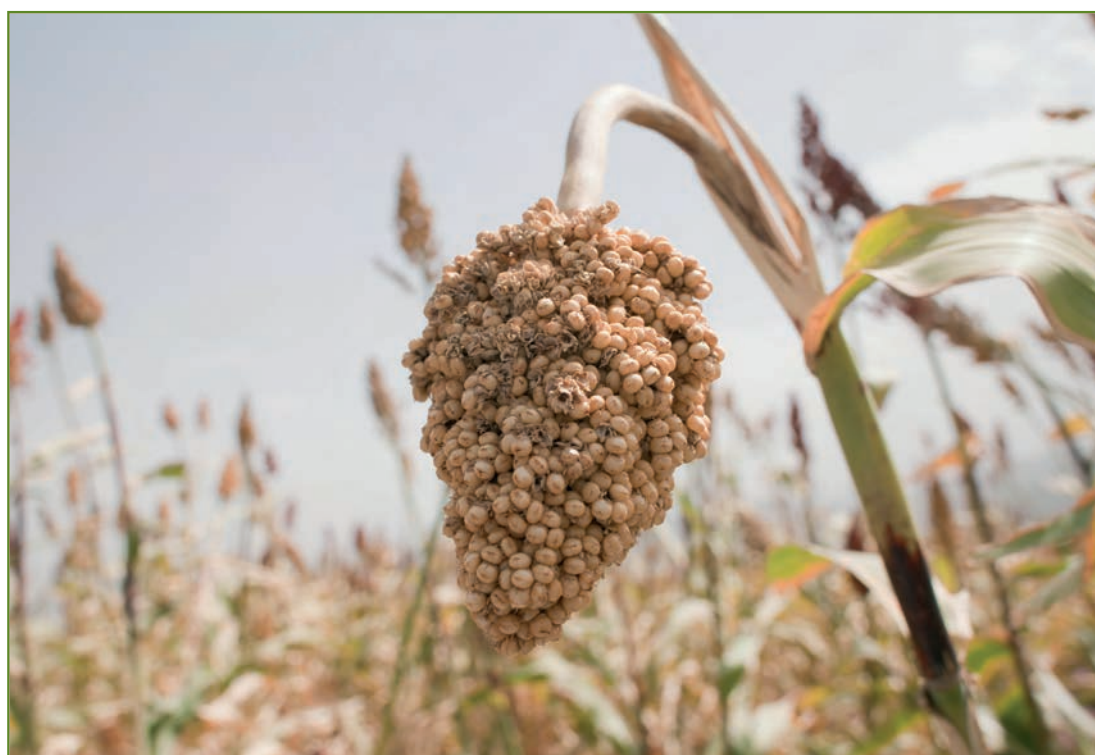
The Sources of the Funding Strategy

The Funding Strategy comprises resources over which the Governing Body has direct control, as well as resources that are allocated by other entities for the implementation of the International Treaty's objectives, over which the Governing Body does not have direct control.

Sources that are not under the direct control of the Governing Body include those financial resources that Contracting Parties invest within their own national context in policies, programmes and projects for the conservation and sustainable use of crop diversity. In addition, they embrace all those financial resources that are channelled into projects and programmes aiming at implementing the objectives of the International Treaty through bilateral, regional and multilateral cooperation among Contracting Parties. A third and important category of funding sources that are not under the direct control of the Governing Body include those financial resources that are allocated

by international mechanisms, funds and bodies other than the International Treaty, but pursuing the same objectives and therefore contributing to the implementation of the International Treaty.

One of the major sources of resources not under the direct control of the Governing Body is the Global Crop Diversity Trust (hereafter "Crop Trust"). The Crop Trust is an endowment fund that has been established in 2004 with the aim to conserve crop diversity in perpetuity. Its work focuses notably on strengthening the global system of *ex situ* conservation by supporting the activities of gene banks around the world. Together with the Government of Norway the Crop Trust covers the maintenance costs of the Svalbard Global Seed Vault (see Box 4.2). The Governing Body of the International Treaty has officially welcomed the Crop Trust as an essential element of its Funding Strategy. The Funding target of the Crop Trust is US\$ 260 million, which would generate roughly US\$ 12 million per



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year. Up to date it has raised over US\$ 150 million.³⁰

The sources that are under the direct control of the Governing Body are in part used for the organization of the regular sessions of the Governing Body and intersessional meetings of subsidiary bodies and expert groups. This includes also the work of the Secretariat of the International Treaty (hereafter “Secretariat”) in preparation for these meetings and in carrying out the tasks accorded to it by the Governing Body.

An important share of the resources under the direct control of the Governing Body flows directly into initiatives for the conservation and the sustainable use of PGRFA in developing countries. These are mainly voluntary contributions that are allocated for this purpose to the Benefit-sharing Fund of the International Treaty. Financial resource-

es resulting from monetary benefit-sharing from commercialization will also flow into the Benefit-sharing Fund.

The Benefit-sharing Fund of the Funding Strategy

The Benefit-sharing Fund is an innovative mechanism that seeks to share the global benefits that arise from the use of PGRFA directly with those who actively contribute to the conservation and sustainable use of crop diversity. The Benefit-sharing Fund supports initiatives that focus on on-farm management and conservation of PGRFA and the sustainable use of PGRFA, in Contracting Parties that are developing countries. It deserves special attention because it is the only source of funding for initiatives that aim at implementing the objectives of the International Treaty over which the Governing Body has direct control.

Table 4.1: The Sources of the Funding Strategy

1. Sources under the direct control of the Governing Body		
Financial resources resulting from <i>monetary benefit-sharing from commercialization</i> .	<i>Voluntary contributions</i> from Contracting Parties, the private sector, and other organizations and institutions.	Financial resources provided through the <i>Regular Programme of FAO</i> .
2. Sources not under the direct control of the Governing Body		
Resources allocated through <i>bilateral, regional and multilateral channels</i> .	Resources allocated by other <i>international mechanisms, funds and bodies</i> .	Resources allocated through <i>national activities</i> of Contracting Parties.

³⁰ Status 31 December 2010.

For more detailed information about the relationship of the Crop Trust and the International Treaty refer to lesson 5 of this module.



The Funding Sources of the Benefit-sharing Fund

The Benefit-sharing Fund is a trust account that was set up to collect the financial resources that arise from monetary benefit-sharing from commercialization referred to above in the context of the Multilateral System. In addition, it can also receive voluntary contributions by Contracting Parties, international institutions, foundations, the private sector and other possible sources.³¹

The Benefit-sharing Fund is thus fed by the first two sources illustrated in Table 4.1 above: financial resources from monetary benefit-sharing and voluntary contributions. In fact, up to date the Benefit-sharing Fund relies entirely on voluntary contributions. This is mainly because the process to develop a new crop variety until its commercialization takes about 10-15 years. Consequently, since

the International Treaty has only entered into force in 2004, mandatory monetary benefit-sharing from commercialization cannot realistically be expected before 2015-2020, approximately.

Early Implementation of the Benefit-sharing Fund

Thanks to early contributions by Contracting Parties³² the Governing Body was able to launch the Benefit-sharing Fund in 2009. A total of US\$ 550 000 was allocated to eleven small-scale projects in developing countries over a period of two years. In Peru, for example, the Benefit-sharing Fund supported the Potato Park of the ANDES association. This project helps enabling local farmers to adapt their traditional potato varieties to climate change.³³ This first round of projects supported by the Benefit-sharing Fund can be seen as the pilot implementation phase of the Benefit-sharing Fund.



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³¹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Arts. 13.2d)ii) and 18.4f).

³² The first donors included the Governments of Italy, Norway, Spain and Switzerland.

³³ For a short description of the first projects funded under the Benefit-sharing Fund see: http://ftp.fao.org/ag/agp/planttreaty/funding/pro_list09_01_en.pdf.



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In 2009, the Governing Body also approved the Strategic Plan for the Implementation of the Benefit-sharing Fund of the Funding Strategy (hereafter “Strategic Plan”). The Strategic Plan, as illustrated in Table 4.2 below, establishes a funding target of US\$ 116 million for the Benefit-sharing Fund, to

be reached over the five-year period between July 2009 and December 2014.³⁴

In July 2010 the Secretariat opened the second call for project proposals. The thematic focus of this second call for proposals was on ensuring sustainable food security by as-

Table 4.2: Plan to Secure the US\$ 116 million Objective in Commitments over a Five Year Period.

	Year 1 (18 months)	Year 2	Year 3	Year 4	Year 5
Cumulative Target (US\$ million)	10	27	50	80	116
Annual Target (US\$ million)	10	17	23	30	36
# Contracting Party contributions	5-7	6-8	6-8	10-14	10-14
% Contributed by Contracting Party	98-100%	90-95%	90-93%	80-85%	75-85%
# other contributors	0-3	2-4	4-6	6-10	8-12

³⁴ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009b).



sisting farmers to adapt to climate change through a targeted set of high impact activities. In fact, the United Nations Framework Convention on Climate Change (UNFCCC) officially recognizes the Benefit-sharing Fund as an option for adaptation funding.³⁵ For this second project cycle of the Interna-

tional Treaty, the Benefit-sharing Fund will be able to invest more than US\$ 10 million, which is in line with the Strategic Plan. This corresponds practically to a twentyfold increase of funds allocated under the Benefit-sharing Fund in a period of less than two years!³⁶

Key points to remember:

- The aim of the Funding Strategy is to mobilize sufficient financial resources for the realization of the objectives of the International Treaty.
- The Crop Trust is an essential element of the Funding Strategy in the area of *ex situ* conservation of PGRFA.
- The Benefit-sharing Fund is under the direct control of the Governing Body. It supports initiatives for the conservation and the sustainable use of PGRFA in developing countries, with a focus on on-farm conservation.
- The first project cycle under the Benefit-sharing Fund was launched in 2009 with a total of US\$ 550 000 in support of eleven small-scale projects for the conservation and the sustainable use of PGRFA in developing countries.
- Under the second project cycle starting in 2011 more than US\$ 10 million will be invested in around 30 projects under the thematic focus of ensuring sustainable food security by assisting farmers to adapt to climate change.
- The Strategic Plan establishes a funding target for the Benefit-sharing Fund of US\$ 116 million between July 2009 and December 2014.



³⁵ UNFCCC (2011).

³⁶ The major donors of the second call for project proposals included the Governments of Australia, Ireland, Italy, Norway and Spain.

All relevant information on the Call for Proposals 2010 is available at: http://www.planttreaty.org/funding_en.htm. The lessons of the forthcoming Module V of this series will provide in-depth information on the Funding Strategy in general and its Benefit-sharing Fund more specifically, and present examples of projects that have received funding under the Benefit-sharing Fund.

4.3. Governance of the International Treaty

4.3.1. The Governing Body

The Governing Body is the supreme decision-making body of the International Treaty. It is constituted by all Contracting Parties – i.e. those countries who have formally ratified, accepted, approved or acceded to the International Treaty.³⁷ Its core function is to promote the full implementation of the International Treaty.

The sessions of the Governing Body take place on a regular basis at least every two years to review the progress and programme of work of the International Treaty. Here, the representatives of the Contracting Parties meet to take the necessary decisions for the gradual implementation of the Inter-

national Treaty.³⁸ *Inter alia*, the Governing Body provides policy direction and guidance, and adopts plans, programmes and budgets. It is further empowered to establish subsidiary bodies (e.g. committees) and launch intersessional processes. The Governing Body may also consider and adopt amendments to the International Treaty.³⁹ The decisions of the Governing Body are generally taken by consensus among Contracting Parties.

For example, the Governing Body adopted the SMTA and the Funding Strategy at its first session in 2006, and at its third session in 2009 it adopted the Strategic Plan for the Implementation of the Benefit-sharing Fund of the Funding Strategy.



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³⁷ For a constantly updated list of Contracting Parties see: <http://www.fao.org/Legal/treaties/033s-e.htm>.

³⁸ For an overview of the reports and working documents of past sessions of the Governing Body see: http://www.planttreaty.org/gbpre_en.htm.

³⁹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 19.



4.3.2. The Bureau

The Bureau of the International Treaty is composed of the Governing Body's Chairperson and the Vice-Chairpersons, one for each region, which makes a total of seven Bureau members.⁴⁰ The Bureau members are elected by the Governing Body for the period in between two sessions, ensuring regional balance and coordination among the Contracting Parties of their region.⁴¹ The Bureau meets in the intersessional period in order to discuss focus topics to be addressed by the Governing Body, oversees the progress of the subsidiary bodies and processes and provides guidance to the Secretary. For example, in the context of the project cycle under the Benefit-sharing Fund, the Bureau assumes the role of selecting the project proposals to be funded.

4.3.3. The Secretary

The Secretary is appointed by the Director-General of FAO. Together with its staff

– jointly referred to as the Secretariat – the main functions of the Secretary are to provide practical and administrative support for the sessions of the Governing Body and to assist the Governing Body in carrying out its functions. The Secretary carries out the tasks conferred to him by the Governing Body. For the accomplishment of these tasks the Secretary establishes and maintains partnerships and cooperations with other relevant organizations and institutions.⁴²

The Secretariat also provides support for the Bureau and any other subsidiary body established by the Governing Body. Concretely, the Secretariat is responsible for the organization of the meetings of these bodies and the preparation of the necessary documentation. In addition, the Secretary communicates the decisions of the Governing Body, as well as any information received from Contracting Parties in accordance with the provisions of the International Treaty, to Contracting Parties and to the Director-General of FAO.⁴³



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⁴⁰ The Governing Body has seven regions: Africa, Asia, Latin America and the Caribbean, Near East, Northern America, South West Pacific.

⁴¹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 19.11.

⁴² For an overview on such partnerships and collaborations please refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

⁴³ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 20.





4.3.4. A Glimpse at the Subsidiary Bodies and Intersessional Processes

In order to advance the Governing Body's work in the period between two sessions, a number of subsidiary bodies have been established. The subsidiary bodies are composed by experts from all world regions. They deliberate on the further implementation of certain components of the International Treaty and prepare strategies and legal text for the consideration and adoption by the Governing Body.

The following subsidiary bodies have been established to date:⁴⁴

- *Ad Hoc* Advisory Committee on the Funding Strategy
- *Ad Hoc* Technical Advisory Committee on the Standard Material Transfer Agreement and the Multilateral System
- *Ad Hoc* Working Group on Compliance
- *Ad Hoc* Third Party Beneficiary Committee

4.3.5. The Role of the National Focal Points

The National Focal Points are the contact persons appointed by the governments of Contracting Parties. They ensure the link between the international and the national level for all matters related to the International Treaty. The Secretariat channels its communications to Contracting Parties through their National Focal Points. The role of the National Focal Points is to communicate and coordinate issues related to the International Treaty with the relevant institutions and officials at the national level, as appropriate.

In order to facilitate the communication among Contracting Parties, a list with the contact details of National Focal Points is available online.⁴⁵ Contracting Parties that have not yet nominated a National Focal Point are invited to do so through their competent ministries.⁴⁶

⁴⁴ The roles and work of these subsidiary bodies will be presented in more detail in the lessons of forthcoming Module IV and Module V of this series in their respective context.

⁴⁵ See: http://www.planttreaty.org/members_en.htm.

⁴⁶ Nominations should be sent to pgrfa-treaty@fao.org.



Key points to remember:

- The Governing Body is the supreme decision-making body of the International Treaty.
- The Governing Body is constituted by all Contracting Parties and meets on a regular basis at least every two years.
- The Bureau is composed by the Chairperson and the Vice-Chairpersons of the Governing Body, one for each of the seven regions of the International Treaty.
- The Bureau meets between the session of the Governing Body to discuss intersessional work and focal topics to be addressed by the Governing Body, and to provide guidance to the Secretary.
- The Secretary provides support to the Governing Body to carry out its functions, including any subsidiary body established by the Governing Body.
- The Secretary also ensures communication with Contracting Parties, and establishes collaborations and partnerships that contribute towards the effective implementation of the International Treaty.
- Several subsidiary bodies have been established by the Governing Body. These are composed of experts from all regions. They prepare strategies and legal text for the consideration and adoption by the Governing Body.
- National Focal Points are the contact persons appointed by the governments of Contracting Parties for all matters related to the International Treaty.



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4.4. Conclusive Summary

The International Treaty can be understood as a ‘framework convention’, in the sense that it is continuously being further developed and implemented by its Contracting Parties.

The provisions related to conservation and sustainable use of PGRFA highlight the need for a complementary approach to *in situ* and *ex situ* conservation. Moreover, they emphasize the inherent linkage between the conservation and the sustainable use of crop diversity. Indeed, conserving PGRFA would be of little use if it is not done with the aim of subsequently using them for agricultural research and breeding, and finally cultivation and consumption.

The International Treaty is the first legally binding international agreement that acknowledges the contribution of farmers all over the world to the development and conservation of crop diversity. While the realization of the measures to promote Farmers’ Rights remains at the discretion of national authorities, the International Treaty advises Contracting Parties to implement national regulations related to Farmers’ Rights and provides farmers a basis to advocate their rights.

The Multilateral System of Access and Benefit-sharing is the core mechanism of the International Treaty. It can be thought of as a global pool of PGRFA shared and managed jointly by all Contracting Parties of the International Treaty, and from where PGRFA can be obtained on standardized terms. The

crops that make up the Multilateral System provide for more than 80 percent of human calorie intake from plants.

Up to date over 1.3 million samples of germplasm have been officially included into the Multilateral System by CGIAR Centres, Contracting Parties and other institutions. Material from the Multilateral System can be accessed for the purposes of agricultural research and breeding by anybody according to a standard contract, the SMTA. The SMTA facilitates exchanges of PGRFA and ensures that commercial benefits are shared in a fair and equitable way.

The Benefit-sharing Fund has a funding target of US\$ 116 million until 2014. It became functional in 2009, and in 2010 opened its second call for project proposals. For this second project cycle the Benefit-sharing Fund will invest more than US\$ 10 million in initiatives aiming at the conservation and sustainable use of PGRFA in Contracting Parties that are developing countries, and that have a focus on helping ensure sustainable food security by assisting farmers to adapt to climate change.

The Governing Body is the supreme decision-making body of the International Treaty, composed by the representatives of all Contracting Parties. It meets at least every two years with the task to promote the effective implementation of the International Treaty. The decisions of the Governing Body are taken by consensus.



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The Legal Architecture Governing Crop Diversity and Partnerships for Implementation



LESSON 5



Learning objectives

At the end of this lesson, the learner will:

- possess a sound understanding of the International Treaty's role within the broader international legal framework governing plant genetic resources; and
- be familiar with some of the main partnerships at the international level for the implementation of the International Treaty.



Target learner groups

Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Malus sylvestris, European Wild Apple, by Elizabeth Blackwell (1739)

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5.1. Overview of the Lesson

This lesson provides an overview of the role of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”) within the broader international legal architecture governing plant genetic resources. It further presents the International Treaty’s relationship with some international institutions and bodies that contribute towards the achievement of its objectives.

Several legal instruments and processes related to different aspects of plant genetic resources management exist at the international level. Aiming at providing a systematized overview, the first part of this lesson presents selected key instruments that are of direct relevance to the International Treaty, arranged by the policy area they address (conservation and sustainable use, access and benefit-sharing and intellectual property rights). The respective objectives and scopes of these instruments are outlined, focusing on their relationship with the International Treaty.

The second part of the lesson presents some of the main partnerships the Governing Body of the International Treaty (hereafter “Governing Body”) and its Secretariat maintain with other international institutions for the effective implementation of the International Treaty. Enumerating all partnerships and collaborations would go beyond the scope of this introductory lesson. It will thus be limited to those bodies that have entered into formal agreements with the International Treaty. As most of these bodies are being introduced elsewhere in this module, the lesson concentrates on the nature and area of their collaboration with the International Treaty.

After completion of this lesson the learner will have a sound understanding of the International Treaty’s role within the broader international legal framework governing PGRFA. The lesson furthermore contributes to prepare him or her for several lessons of the forthcoming educational modules of this series that will study the main components of the International Treaty in the context of other relevant institutions.



5.2. The International Legal Architecture Governing Plant Genetic Resources

While some of the instruments presented below are legally binding for the countries that have adhered to them, others are voluntary in nature – so-called ‘soft law’ instruments. Legally speaking, soft law instruments cannot be enforced upon countries. Soft law instruments are nevertheless of importance as they are negotiated in good faith. Once countries adopt a soft law instrument they are expected to meet their non-binding commitments under that instrument as reasonably as possible. Moreover, in many instances a soft law instrument can serve as a basis for the subsequent development of a legally binding instrument.¹

5.2.1. The Policy Area of Conservation and Sustainable Use of Genetic Resources

The Convention on Biological Diversity

This module refers repeatedly to the Convention on Biological Diversity (CBD). It is being addressed in the context of some of the terms and concepts in lesson 2, as well as in lesson 3 dealing with the historical background of the International Treaty.

The conservation of biological diversity and the sustainable use of its components are two of the three main objectives of the CBD. Legally binding in nature, the scope of the CBD covers all components



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¹ In this context the International Treaty is probably the best example of a legally binding instrument that has evolved on the basis of the International Undertaking on Plant Genetic Resources, which was a voluntary instrument. For more historical background on the International Undertaking and the negotiations of the International Treaty refer to lesson 3 of this module (History of the International Treaty).



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of biological diversity. By definition, this includes also crop diversity and plant genetic resources for food and agriculture (PGRFA).

Contracting parties to the CBD agree to develop national measures and policies for the conservation and sustainable use of biodiversity, stressing the need for a complementary approach to *in situ* and *ex situ* conservation, and recognize the important role of indigenous and local communities for effective *in situ* conservation. They agree to promote research and training related to the conservation and sustainable use of biodiversity, and to cooperate at all levels and notably in scientific activities. This includes exchanging information that is relevant to the conservation and the sustainable use of biodiversity.²

There are many parallels between the CBD and the International Treaty in the policy area of conservation and sustainable use of genetic resources. The two instruments' respective provisions are completely compatible and in line with each other. In this regard, the main difference is that the International Treaty is of a more specialized nature than the CBD. This means that its scope covers in particular the conservation and the sustainable use of PGRFA. The International Treaty's provisions respond to the specific needs and priorities related to the subset of biodiversity that is constituted by PGRFA, with the overall goal to achieve global food security.³ The effective implementation of the provisions on conservation and on sustainable use under the International Treaty directly contributes to achieving the objectives of the CBD in the area of crop diversity.

² Convention on Biological Diversity (1992), Arts. 1, 5-14, 17+18.

³ To learn more about the special nature of PGRFA in relation to other components of biodiversity see lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change). For an overview of the International Treaty's provisions on conservation and sustainable use refer to lesson 4 of this module (Main Components and Governance of the International Treaty). In addition, the lessons of the forthcoming Module IV will provide an in-depth analysis of conservation and sustainable use in the context of the International Treaty.





The Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture

The Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (hereafter “Global Plan of Action”) recommends a set of programmes and activities for the conservation and the sustainable use of PGRFA at the community, national, regional and international level. It thereby aims at creating an efficient framework for cooperation, coordination and planning of efforts, and strengthening of capacities. The Global Plan of Action is a ‘rolling instrument’, which means that it is periodically updated according to evolving needs and priorities identified by international experts.⁴

Unlike the International Treaty, the Global Plan of Action is of a voluntary nature. However, not being legally binding on countries allows it to go into more detail in its recommendations that aim at ensuring the conservation and the sustainable use of PGRFA worldwide. Many of the over 160 countries that have formally adopted the Global Plan of Action have in fact designed their own national programmes according to its priority setting. The Global Plan of Action has indeed created an international common ground for coordinated action regarding the conservation and sustainable use of PGRFA.⁵

The International Treaty’s provisions on conservation and on sustainable use of PGRFA reflect the essence of the recommendations contained in the Global Plan of Action. In addition, the International Treaty, through its Article 14, integrates the Global Plan of Action as a supporting component. This gives the Global Plan of Action more weight, as the International Treaty provides its Contracting Parties with the legal basis for implementing the Global Plan of Action. By recognizing the Global Plan of Action as a supporting component of the International Treaty, Contracting Parties formally agreed to promote its effective implementation. In this sense the two instruments mutually reinforce each other.⁶

Genebank Standards

The Genebank Standards are voluntary standards for the harmonization of *ex situ* seed storage in gene bank facilities worldwide. They were endorsed by the FAO Commission on Genetic Resources for Food and Agriculture (hereafter “Commission”) in 1993.⁷ The Genebank Standards are designed for the use of gene bank managers and their staff at the national, regional and international level. They explain in a technical and detailed manner under what conditions germplasm is to be stored and preserved in order to ensure quality and conservation of the material.⁸ The International Agricultural Research Centres of the Consultative Group on International Agricultural Research (hereafter “CGIAR Centres”), for instance, are committed to manage and administer their *ex situ* collections in accordance with the Genebank Standards.⁹

⁴ FAO (1996).

⁵ For an overview of the coordinated action see the Global Monitoring System of the Global Plan of Action: <http://www.pgrfa.org/gpa/selectcountry.aspx>.

⁶ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 14.

⁷ At the time of the elaboration of the Genebank Standards, the Commission was still called ‘Commission on Plant Genetic Resources’. The Commission’s mandate was broadened by the FAO Conference in 1995 to cover all components of biodiversity of relevance to food and agriculture. Accordingly, the Commission was renamed ‘Commission on Genetic Resources for Food and Agriculture’.

⁸ FAO (1993b).

⁹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 15.1d).



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Although the Genebank Standards were endorsed well before the adoption of the International Treaty, they provide guidance on how certain aspects related to the provisions on *ex situ* conservation contained in the International Treaty can be adapted to and implemented at the gene bank level.¹⁰

Key points to remember:

- The CBD is a legally binding instrument. Its scope covers all components of biological diversity.
- The respective provisions of the CBD and the International Treaty in the area of conservation and sustainable use of genetic resources are completely compatible and in line with each other.
- Effectively implementing the provisions on conservation and on sustainable use of the International Treaty directly contributes to achieving the objectives of the CBD in the area of crop diversity.
- The Global Plan of Action is a voluntary instrument that recommends a set of programmes and activities for the conservation and the sustainable use of PGRFA.
- The International Treaty integrates the Global Plan of Action as a supporting component. Thereby, it provides its Contracting Parties with the legal basis for implementing the Global Plan of Action.
- The Genebank Standards are voluntary standards for the harmonization of *ex situ* seed storage in gene bank facilities worldwide.
- The Genebank Standards provide guidance on how certain aspects related to the provisions on *ex situ* conservation contained in the International Treaty can be adapted to and implemented at the gene bank level.

¹⁰ In 2009, the Governing Body invited the Commission to update the Genebank Standards. The process has started and the revised Genebank Standards are foreseen to be adopted by the Commission at its Thirteenth Regular Session in November 2011.



5.2.2. The Policy Area of Access and Benefit-sharing in Relation to Genetic Resources

The CBD, the Bonn Guidelines and the Nagoya Protocol

The CBD

The CBD was the first international legally binding instrument that adopted the concept of access and benefit-sharing (ABS). The fair and equitable sharing of benefits that are obtained through the use of genetic resources is the third of the three objectives of the CBD.¹¹

In a simplified way, ABS can be understood as a mechanism that regulates the exchange of a given resource between certain actors. In the context of biological diversity, ABS regulates exchanges of genetic material between a legitimate holder and a subsequent user of genetic resources. The CBD laid down the broad principles that countries are to respect when requesting and granting each other access to their genetic resources. These foresee that benefits that may arise from the use of

such genetic resources be shared in a fair and equitable way with the country granting access (e.g. non-monetary benefits such as research results or also possible monetary benefits from the commercialization of a product that has been developed on the basis of the accessed resource).

The basis for ABS under the CBD is laid down in its Article 15:

- National governments hold the authority to grant or deny access to anyone asking for access to any given genetic resource under their jurisdiction. However, they shall not restrict access to their genetic resources in the case that such a restriction would run counter the objectives of the CBD.
- The two conditions that are central to ABS under the CBD are: (1) the prior informed consent (PIC) of the party holding the genetic resource; and (2) that the terms upon which access is granted, as well as for the sharing of the benefits between the two parties, are mutually agreed upon (the condition of mutually agreed terms or MAT).



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¹¹ Convention on Biological Diversity (1992), Article 1.

The Bonn Guidelines

While the basic principles for an ABS mechanism regulating exchanges of genetic resources were herewith established, such a mechanism was still far from being operational when the CBD entered into force. In an attempt to assist national governments to comply with their obligations related to ABS, the decision-making body of the CBD (in the context of the CBD called “Conference of Parties”) adopted the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization (hereafter “Bonn Guidelines”).

The Bonn Guidelines aim at assisting governments and other stakeholders in developing an overall ABS strategy, and in identifying the steps involved in the process of obtaining access to genetic resources and benefit-sharing. More specifically, these voluntary guidelines are meant to assist governments and other stakeholders when establishing legislative, administrative or policy measures on ABS and

when negotiating contractual arrangements for ABS. To that end they include detailed recommendations for the implementation of ABS strategies, including with regard to the distribution of roles and responsibilities in ABS systems. Notably, the Bonn Guidelines propose elements for effective mechanisms to ensure compliance with the principles of PIC and MAT.¹²

The Nagoya Protocol

Negotiations on a legally binding agreement on ABS that would aim at regulating international exchanges of all genetic resources (except human genetic resources), including for purposes other than agriculture, started in the framework of the CBD in 2005. They culminated in October 2010 in the adoption of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (hereafter “Nagoya Protocol”). The Nagoya Protocol is foreseen to enter into force in 2012.



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¹² Secretariat of the Convention on Biological Diversity (2002).



The Nagoya Protocol requires that the countries that adhere to it take legislative, administrative or policy measures to ensure that benefits that arise from the utilization of genetic resources are shared upon mutually agreed terms and in a fair and equitable way with the provider country of these resources. The recipient of the material also has to ensure that the prior informed consent of the country granting access to its genetic resources is established. The Nagoya Protocol notably provides for the creation of internationally recognized certificates of compliance to serve as evidence that the genetic resources which they cover have been accessed in accordance with PIC and MAT. However, such measures – including the certificates of compliance – are to be developed at the national level and it is therefore likely that they may vary from country to country. This implies that gener-

ally the terms of exchange would have to be negotiated and agreed on a case by case basis.

Since the entry into force of the International Treaty in 2004, its Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”) has established itself as an efficient ABS mechanism in the domain of PGRFA. In order to facilitate access to PGRFA in compliance with the conditions of PIC and MAT according to the CBD, the Contracting Parties of the International Treaty have designed a standard contract (the Standard Material Transfer Agreement, or simply SMTA) to be used for transfers of PGRFA under the Multilateral System. The SMTA provides for transparent regulations regarding access and lays down clear terms for monetary benefit-sharing.

Box 5.1: The Basics of the Multilateral System of Access and Benefit-sharing of the International Treaty

Within the Multilateral System, the Contracting Parties of the International Treaty grant each other facilitated access to their genetic resources of 64 food crops and forages for purposes of agricultural research and breeding. These food crops and forages contained in the Multilateral System are listed in Annex I of the International Treaty. They include a number of the most important PGRFA for food security. The Contracting Parties of the International Treaty also agree to share the benefits that may arise from the use of these PGRFA in a fair and equitable way among each other. The Multilateral System foresees the possibility to share benefits both in non-monetary terms – through technology transfer, information exchange and capacity building – as well as to share monetary benefits arising from the use of PGRFA.

This multilateral approach to access and benefit-sharing – based on transparent and standardized procedures – is the truly innovative feature of the International Treaty. The Multilateral System accounts for the fact that PGRFA, unlike certain other types of genetic resources, rely on being constantly exchanged and used in order for crop diversity to be conserved and increased. The Multilateral System is of particular importance for the achievement of food security in the context of climate change as it facilitates agricultural research and breeding activities.¹³



¹³ The Multilateral System is dealt with in lesson 4 of this module (Main Components and Governance of the International Treaty). An in-depth analysis of the different aspects and the operation of the Multilateral System will be provided in the forthcoming Module IV of this series.

The acceptance of the terms of the SMTA by both the provider and the recipient of PGRFA in a transfer of genetic material ensures that the conditions of PIC and MAT are fulfilled. The Multilateral System and the ABS provisions of the CBD are therefore in mutual harmony. The SMTA facilitates the exchange of PGRFA by providing legal certainty and transparency. Consequently, many countries and institutions holding PGRFA have decided to apply the terms of the SMTA also in transfers of PGRFA that are not listed in Annex I.¹⁴ The Multilateral System of the International Treaty thus contributes substantially to the implementation of the CBD with regards to ABS in the area of PGRFA.

The existence and functioning of the Multilateral System has therefore been considered in the Nagoya Protocol. In fact, the decision by which the Nagoya Protocol was adopted recognizes the International Treaty as one

of the four components of the international regime on access to genetic resources and benefit-sharing.¹⁵ The Nagoya Protocol recognizes the interdependence of all countries with regard to PGRFA, as well as the special nature of PGRFA and their importance for food security. In this context, it acknowledges the fundamental role of the International Treaty, recalling notably its Multilateral System.

Article 3 *bis* of the Nagoya Protocol states clearly that, where a specialized international ABS instrument that is consistent with and does not run counter to the objectives of the CBD and the Nagoya Protocol – such as the Multilateral System of the International Treaty – applies, the Nagoya Protocol will not apply for the countries that are parties to the specialized instrument “in respect of the specific genetic resource covered by and for the purpose of the specialized instrument.”¹⁶



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¹⁴ In that case, although the text of the agreement under which the non-Annex I material is transferred is identical to the SMTA, legally speaking it cannot be considered as an SMTA under the International Treaty since certain provisions in the SMTA are specific to the International Treaty and the Multilateral System.

¹⁵ Secretariat of the Convention on Biological Diversity (2010), Decision X/1, pp. 83-86.

The other three components mentioned in the decision are the CBD, the Nagoya Protocol and the Bonn Guidelines.

¹⁶ Nagoya Protocol (2010), Preamble, Arts. 3*bis*, 4, 5+13.





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In the context of PGRFA, concretely, this means that genetic material of the food crops and forages contained in Annex I of the International Treaty fall under the terms for facilitated exchange of the Multilateral System. For PGRFA that are not listed in Annex I of the International Treaty the terms of access and benefit-sharing of the Nagoya Protocol will apply. This, however, does not preclude that the legitimate holders of non-Annex I-crops may opt to apply the terms of the SMTA of the International Treaty as a means to comply with the Nagoya Protocol.¹⁷ Yet, all exchanges of genetic resources that are not of plant origin, have no potential value for food and agriculture, and/or are not to be used for agricultural research and breeding activities, will be regulated by the Nagoya Protocol.

The International Code of Conduct for Plant Germplasm Collecting and Transfer

The International Code of Conduct for Plant Germplasm Collecting and Transfer (hereafter “Code of Conduct”) is a voluntary instru-

ment that aims at promoting the rational collection and sustainable use of PGRFA, preventing genetic erosion, and protecting the interests of both providers and collectors of germplasm. It sets out minimum responsibilities of collectors, providers, gene bank managers and users of collected germplasm, in the collection and transfer of plant germplasm. The Code of Conduct was adopted by the Conference of the Food and Agriculture Organization of the United Nations (FAO) in 1993 and addresses primarily governments.¹⁸

In the context of the International Treaty, the Code of Conduct is of special relevance to the issue of access to PGRFA found in *in situ* conditions. The International Treaty foresees that such access shall be provided according to national legislation. In the absence of national legislation, the Governing Body may set international standards for access to Annex I *in situ* material, which may be based, for instance, on the voluntary standards set out in the Code of Conduct.¹⁹

¹⁷ See above annotation (footnote 14).

¹⁸ FAO (1993a).

¹⁹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 12.3h).



Key points to remember:

- The CBD was the first international legally binding instrument that introduced the concept of ABS.
- The CBD laid down the broad principles that countries are to respect when requesting and granting each other access to their genetic resources: prior informed consent (PIC) and mutually agreed terms (MAT).
- The voluntary Bonn Guidelines are meant to assist governments and other stakeholders when establishing legislative, administrative or policy measures on ABS and when negotiating contractual arrangements for ABS.
- The Nagoya Protocol is a legally binding instrument to regulate international exchanges of all genetic resources (except human genetic resources).
- The decision by which the Nagoya Protocol was adopted recognizes the International Treaty as one of the four components of the international regime on access to genetic resources and benefit-sharing.
- The Nagoya Protocol requires that the countries that adhere to it take measures to ensure compliance with PIC and MAT in transfers of genetic resources.
- The SMTA of the International Treaty ensures compliance with PIC and MAT in transfers of PGRFA that are part of the Multilateral System.
- The Multilateral System of the International Treaty and the ABS provisions of the CBD and the Nagoya Protocol are in mutual harmony.
- The Nagoya Protocol acknowledges the fundamental role of the International Treaty with regard to ABS in the area of PGRFA, recalling notably its Multilateral System.
- Genetic material of the food crops and forages contained in Annex I of the International Treaty fall under the terms for facilitated exchange of the Multilateral System. For PGRFA that are not listed in Annex I of the International Treaty the terms of access and benefit-sharing of the Nagoya Protocol will apply.
- The Code of Conduct is a voluntary instrument that sets out minimum responsibilities of collectors, providers, gene bank managers and users of collected germplasm, in the collection and transfer of plant germplasm.



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5.2.3. The Policy Area of Intellectual Property Rights in the Domain of Genetic Resources

Broadly speaking, intellectual property rights (IPR) are a form of protection for inventions or products with certain unique characteristics. The rationale for granting IPR basically is to reward innovators and producers for their efforts during the phase of development and to compensate them for their investments during that period, with the aim to boost innovations.

Different forms of IPR, such as trademarks, copyrights, geographical indications and patents, can be applied to a whole range of products such as artworks or scientific innovations. IPR in the form of patents and copyrights generally prevent others from commercializing or using a product for a defined period without the authorization of the inventor or creator. Geographic indications protect products that originate in specific geographic areas that award them special qualities.

Different schemes of IPR also apply to crop varieties. In this context, it is important to note that the International Treaty is neutral with regard to IPR. It neither bans nor encourages their use.

However, under the International Treaty all holders of crop genetic material that is covered by the Multilateral System are invited to grant facilitated access to this material to agricultural researchers and breeders without restriction. In addition, IPR cannot be vested in any crop genetic material in the same form it was received from the Multilateral System. The International Treaty encourages breeders which develop new varieties that incorporate material originating from the Multilateral System to make samples of the new varieties again available through the Multilateral System. If they decide not to do so, they are required to make a mandatory payment into the Benefit-sharing Fund of the Funding Strategy of the International Treaty (hereafter “Benefit-sharing Fund”).²⁰



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²⁰ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 12. For more information on the Multilateral System and the Benefit-sharing Fund please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

We will now have a look at the major international agreements dealing with IPR in the domain of plant varieties, in order to analyze how they interact with the International Treaty.

The UPOV Convention

UPOV is the French acronym for the International Union for the Protection of New Varieties of Plants.²¹ It was established by the International Convention for the Protection of New Varieties of Plants (hereafter “UPOV Convention”), which is of a legally binding nature on its contracting parties.²² UPOV’s objective is to establish an effective system for the protection of plant varieties by an intellectual property right, in order to encourage the development of new plant varieties, for the benefit of society.²³

The form of IPR granted under the UPOV Convention is commonly referred to as plant breeders’ rights (PBR). In order for a breeder to obtain a plant breeders’ right (PBR) for a new plant variety under the UPOV Convention the following four criteria must be met:

- *Novelty*: a plant variety must be new to the market of the country where the PBR is applied for and other contracting parties of UPOV;
- *Distinctiveness*: the variety must be distinct from other known existing varieties;
- *Uniformity*: the variety must be homogeneous; and
- *Stability*: the unique traits of the variety must be stable, so that the variety remains true to type after repeated cycles of reproduction.



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²¹ In French: Union internationale pour la protection des obtentions végétales.

²² The UPOV Convention was signed in 1961. It was revised three times, in 1972, 1978 and 1991. The 1991 Act entered into force in 1998. New contracting parties can only adhere to the 1991 Act, whereas the previous Acts remain in force for those countries that have adhered to the UPOV convention earlier. In the context of this lesson, reference to the UPOV Convention means the 1991 Act.

²³ See UPOV’s missions statement at: <http://www.upov.int/en/about/>.





Once granted a PBR, the breeder can, for example, require a licensing fee for any company interested in reproducing his or her variety for sale. The PBR is valid for a fixed time frame of generally 20 years.²⁴

Of special interest to the relationship of the UPOV Convention with the International Treaty are the so-called ‘breeder’s exemption’ and the ‘farmers’ privilege’ clauses. The breeders’ exemption clause stipulates that a breeder’s authorization is not required to use a protected variety for private, non-commercial and experimental purposes, and for the breeding of new varieties that are not essentially derived from the protected variety. The farmers’ privilege clause foresees that, subject to national legislation, a protected variety can be used without authori-

zation for the purposes of subsistence farming, as opposed to commercial cash crop farming.²⁵

Insofar as the breeder’s exemption clause allows for further agricultural research and breeding, a PBR can be interpreted as not restricting access to PGRFA according to the terms of the International Treaty.²⁶ In that case, breeders are free to protect a new variety that incorporates crop genetic material from the Multilateral System with a PBR without being subjected to the mandatory requirement of paying a share of their monetary benefits from commercialization into the Benefit-sharing Fund. However, they would still be encouraged to pay an equitable share of the monetary benefits into the Benefit-sharing Fund on a voluntary basis.²⁷



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²⁴ International Convention for the Protection of New Varieties of Plants (1991), Arts. 14+19.

²⁵ *Idem*, Article 15.

²⁶ Please note that under the 1991 Act of the UPOV Convention, this only holds true if the material is used for agricultural research and breeding of new varieties that are not “essentially derived” from the material used for the development of the new variety, i.e. where the new variety does not conform to the initial variety in the expression of its essential characteristics.

²⁷ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 13.2d)ii). The Benefit-sharing Fund collects the monies that accrue through monetary benefit-sharing, as well as voluntary contributions. The financial resources of the Benefit-sharing Fund are used to support projects for the conservation and sustainable use of crop diversity. For more information on the Multilateral System and the Benefit-sharing Fund please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

The TRIPS Agreement

The Agreement on Trade-Related Aspects of Intellectual Property Rights (hereafter “TRIPS Agreement”) is a legally binding international agreement administered by the World Trade Organization (WTO) that sets up minimum standards for different forms of intellectual property for WTO member states. The objective of the TRIPS Agreement is to protect and enforce IPR in order to contribute to the “promotion of technological innovation [...] in a manner conducive to social and economic welfare [...]”.²⁸ Ratification of the TRIPS Agreement is a compulsory requirement of World Trade Organization membership.

Article 27.3b) of the TRIPS Agreement is of special relevance to the relationship with the International Treaty. In its essence, this provision requires WTO member states to provide for a system of intellectual property protection for plant varieties. Either such a system would have to be based on patents, an effective *sui generis* system, or a combination of both. A *sui generis* system (literally: system

“of its own kind”) can be understood as a customized intellectual property system especially designed for the type of matter to be protected and taking into account socio-economic conditions of a given country. Plant Breeders’ Rights under the UPOV Convention are an example of a *sui generis* system for plant varieties.

Any Contracting Party of the International Treaty that is also a member state of the WTO adheres to the requirement under the TRIPS Agreement to provide for a system of intellectual property protection for plant varieties. Accordingly, a breeder who is under the jurisdiction of such a country has the possibility to protect a new plant variety that incorporates crop genetic material received from the Multilateral System by a patent or a PBR.

We have already looked at the effects of plant breeders’ rights in relation to the Multilateral System in the context of the UPOV Convention above. The case of patents is similar, with the difference that in most countries which opt



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²⁸ Agreement on Trade-Related Aspects of Intellectual Property Rights (1994), Article 7.





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for patents for the protection of new plant varieties, such patents do not allow for agricultural research and breeding without the authorization of the patent holder. In such a setting, a breeder having used crop genetic material

from the Multilateral System for the development of a new variety would be subjected to the mandatory requirement of paying a share of his or her monetary benefits from commercialization into the Benefit-sharing Fund.

Key points to remember:

- UPOV's objective is to establish an effective system for the protection of plant varieties by an intellectual property right in order to encourage the development of new plant varieties for the benefit of society.
- IPR under the UPOV Convention are commonly referred to as 'plant breeders' rights'.
- The so-called 'breeders' exemption clause' under the UPOV Convention stipulates that a breeder's authorization is not required to use a protected variety for private, non-commercial and experimental purposes, and for the breeding of new varieties that are not essentially derived of the protected variety.
- Insofar as the breeder's exemption clause allows for further agricultural research and breeding, a PBR can be interpreted as not restricting access to PGRFA according to the terms of the International Treaty.
- The TRIPS Agreement is a legally binding international agreement administered by WTO that sets up minimum standards for different forms of intellectual property.
- The TRIPS Agreement requires WTO member states to provide for a system of intellectual property protection for plant varieties. Either such a system would have to be based on patents, an effective *sui generis* system (such as plant breeders' rights under the UPOV Convention), or a combination of both.
- In the case of most countries that opt for patents for the protection of new plant varieties, such patents do not allow for agricultural research and breeding without the authorization of the patent holder.
- Where access for agricultural research and breeding to a new plant variety that incorporates PGRFA from the Multilateral System of the International Treaty is restricted, the requirement to make a mandatory payment into the Benefit-sharing Fund will be triggered.



Table 5.1: An Overview of Legal Instruments Related to PGRFA

Law or Policy	Topic / Applicability	Status / Jurisdiction
International Treaty on Plant Genetic Resources for Food and Agriculture	<ul style="list-style-type: none"> Covers all PGRFA (does not regulate non-food and non-agricultural uses) and addresses diverse topics, including conservation and sustainable use, Farmers' Rights and access and benefit-sharing. Establishes a Multilateral System for selected crops (64 food crops and forages). Regulates access and benefit-sharing for these materials (both <i>ex situ</i> and <i>in situ</i>). Does not specify access and benefit-sharing rules for PGRFA not in the Multilateral System (except for CGIAR and other international institutions' holdings of such crops that are covered under agreements signed with the Governing Body under Article 15 of the International Treaty agreements). 	<ul style="list-style-type: none"> Entered into force on 29 June 2004. Legally binding for all Contracting Parties (126 as of December 2010).
Convention on Biological Diversity (CBD)	<ul style="list-style-type: none"> Covers all biodiversity. Provides general principles for access and benefit-sharing concerning materials accessed after its entry into force and that are not covered by the International Treaty. 	<ul style="list-style-type: none"> Entered into force in 1993. Legally binding for countries that have ratified (193 as of December 2010)
TRIPS Agreement	<p>Member States:</p> <ul style="list-style-type: none"> Must comply with minimum standards of protection of intellectual property. Must ensure protection of micro-organisms, non-biological and microbiological processes and plant varieties that meet protection criteria. 	<ul style="list-style-type: none"> Entered into force in January 1995. Legally binding for all WTO members that have ratified it (153 as of December 2010).
UPOV Convention	<ul style="list-style-type: none"> Through a succession of international laws, UPOV aims to establish an efficient system for the protection of plant varieties by an intellectual property right, and to harmonize national laws for protecting plant varieties. 	<ul style="list-style-type: none"> Four versions (1961, 1972, 1978 and 1991; only 1991 still open for ratification). Legally binding for ratifying countries (68 as of December 2010).
Agreements entered into by the Governing Body of the International Treaty and the CGIAR Centres and other international institutions under Article 15 of the International Treaty	<ul style="list-style-type: none"> Agreements place the <i>ex situ</i> collections held in trust by the CGIAR Centres and other international institutions within the purview of the International Treaty. Agreements deal with the availability of both Annex I and non-Annex I PGRFA. 	<ul style="list-style-type: none"> Eleven CGIAR Centres (those having <i>ex situ</i> collections) have signed binding agreements with the Governing Body. Agreements replace previous agreements signed with FAO placing the collections under the auspices of FAO.



Law or Policy	Topic / Applicability	Status / Jurisdiction
Global Plan of Action	<ul style="list-style-type: none"> Contains specific 'activities' in regard to <i>in situ</i> conservation and development; <i>ex situ</i> conservation and utilization; and institutions and capacity building. The Global Plan of Action is a 'rolling instrument' and is now in the process of being updated. 	<ul style="list-style-type: none"> Adopted in 1996 by the 4th International Technical Conference on PGRFA (150 countries). Not legally binding. Serves as framework, guide and catalyst for PGRFA efforts. Is a supporting component of the International Treaty: has bearing on and relation to a legally binding agreement.
Agreement for the Establishment of the Global Crop Diversity Trust	<ul style="list-style-type: none"> Establishes the Global Crop Diversity Trust, which is an endowment fund set up to finance long-term <i>ex situ</i> conservation of PGRFA as part of a rational global system. 	<ul style="list-style-type: none"> Entered into force in 2004. Now has some 26 signatories.
Genebank Standards	<ul style="list-style-type: none"> Set out recommended gene bank storage standards for seeds of orthodox species. 	<ul style="list-style-type: none"> Recommended by FAO and IPGRI (now Bioversity International) to be used as the reference in national, regional and international gene banks. Endorsed in 1993 by the FAO Commission on Plant Genetic Resources. Not legally binding.
Code of Conduct for Plant Germplasm Collecting and Transfer	<ul style="list-style-type: none"> Deals with the etiquette of collecting and transfer of PGRFA. Has provisions on collectors' permits, responsibilities of collectors, sponsors, curators and users, as well as on reporting, monitoring and evaluating observance of the Code of Conduct. 	<ul style="list-style-type: none"> Adopted by the FAO Conference in 1993. Not legally binding. Note: <i>both the International Treaty and the CBD have provisions that add to or modify the guidance provided by the Code of Conduct.</i> Article 12.3h) of the International Treaty provides that the Governing Body may set standards regarding access to PGRFA found in <i>in situ</i> conditions.

Source: The International Treaty on Plant Genetic Resources for Food and Agriculture in the context of Other Legal Instruments.²⁹

²⁹ Table adapted from Moore and Goldberg (2010), pp. 2-4.



5.3. Partnerships and Collaborations for the Implementation of the International Treaty

The Secretariat and the Governing Body of the International Treaty maintain numerous relationships with other international organizations, treaty bodies, intergovernmental agencies, relevant FAO departments, Contracting Parties, non-Contracting Parties, civil society and other entities. Enumerating all these partnerships and collaborations would go beyond the scope of this introductory lesson. This section will thus be limited to those bodies that have entered into formal agreements with the International Treaty. Further partnerships and collaborations will be presented in the forthcoming educational modules of this series in their specific context.³⁰

5.3.1. The Food and Agriculture Organization of the United Nations

FAO is a specialized organization of the United Nations. Its mandate is to achieve global food security through raising levels of nutrition, improving agricultural productivity, bettering the lives of rural populations and contributing to the growth of the world economy. FAO acts as a neutral forum serving both developed and developing countries where all nations meet as equals to negotiate agreements and debate policy. FAO is also a source of knowledge and information that helps developing countries and countries in transition modernize and improve agricul-

Box 5.2: The Global Partnership Initiative for Plant Breeding Capacity Building

The Global Partnership Initiative for Plant Breeding Capacity Building (GIPB) is a multi-party initiative of knowledge institutions around the world, physically located within the technical branch of FAO's Plant Production and Protection Division (AGP). It aims at enhancing developing countries' capacities to improve crops for food security and sustainable development through better plant breeding and delivery systems. Thereby the GIPB directly contributes to the International Treaty's objectives mainly in relation to the sustainable use of PGRFA.

The GIPB aims at achieving its objectives through the following activities:³¹

- Support for policy development on plant breeding and to help allocate resources to strengthen and sustain developing countries' capacity to use PGRFA;
- Provision of capacity building relevant to the utilization of plant genetic resources, and in particular to plant breeding;
- Facilitate access to technologies;
- Facilitate exchange of plant genetic resources to enhance the genetic and adaptability base of improved cultivars in developing countries; and
- Sharing of information focused on plant breeding capacity building with national policy makers and breeders in developing country programmes.

The Secretariat of the International Treaty has participated in task force meetings of the GIPB, and the two entities hold regular coordination meetings. Furthermore, the GIPB provides support to the Secretariat of the International Treaty in the preparation of documents for the sessions of the Governing Body related to the sustainable use of PGRFA.

³⁰ For a more complete overview of partnerships and collaborations refer to: <ftp://ftp.fao.org/ag/agp/planttreaty/gb3/gb3w18e.pdf>.

³¹ GIPB (2011).



ture, forestry and fisheries practices and ensure good nutrition for all.

The International Treaty was negotiated within the FAO Commission on Genetic Resources for Food and Agriculture (see below) and adopted by the FAO Conference.³² The Secretariat of the International Treaty is physically located in the premises of FAO headquarters. It forms part of FAO's Plant Production and Protection Division (AGP). The Secretariat maintains numerous partnerships and collaborations with different units and divisions within FAO.

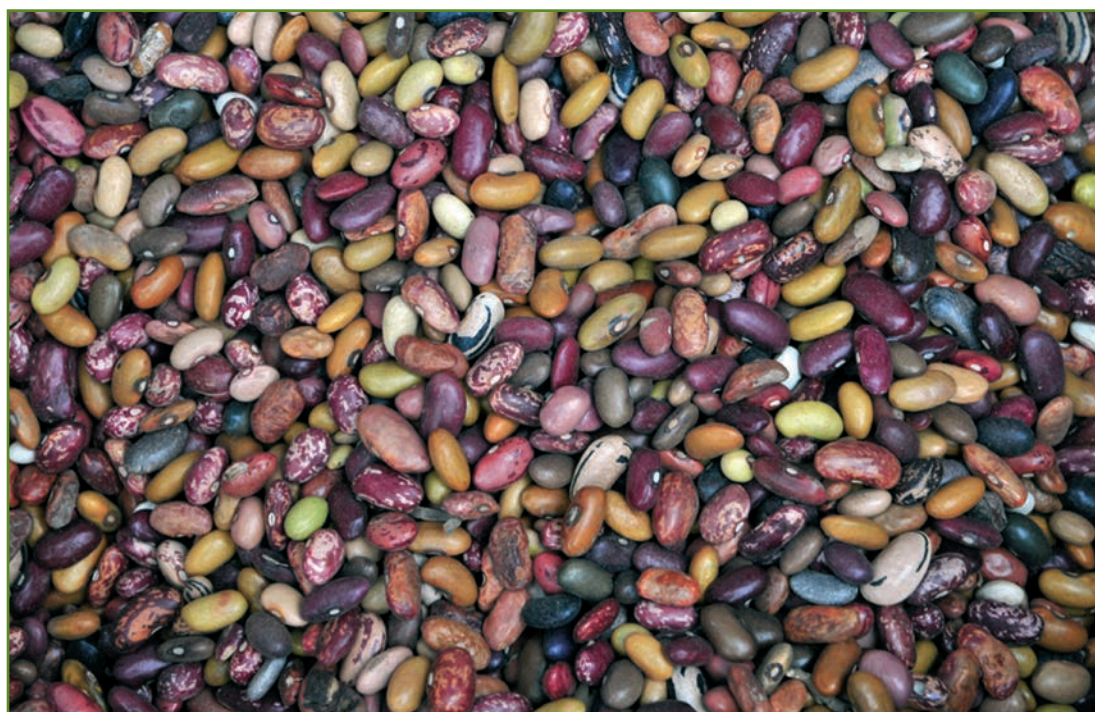
5.3.2. The Global Crop Diversity Trust

The Global Crop Diversity Trust (hereafter "Crop Trust") is an essential element of the Funding Strategy of the International Treaty in relation to *ex situ* conservation and availability of PGRFA. This was recognized by the

Governing Body of the International Treaty at its first session in 2004. The Governing Body also established that it will maintain the overall policy guidance over the Crop Trust.³³

This was retained in a formal relationship agreement between the Governing Body of the International Treaty and the Crop Trust in 2006. The relationship agreement foresees that the Governing Body has the capacity to appoint four members to serve on the executive board of the Crop Trust. The board retains full executive independence over the activities of the Crop Trust, including in relation to the allocation of grants. Furthermore, the executive board of the Crop Trust submits a regular report on its activities to the Governing Body.³⁴

With the aim to support the effective implementation of the International Treaty, up to



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³² It was adopted at the Thirty-first Session of the FAO Conference on 3 November 2001.

For more background information on the origins of the International Treaty refer to lesson 3 (History of the International Treaty).

³³ To learn more about the Crop Trust in the context of the Funding Strategy of the International Treaty refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

³⁴ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2006).

Box 5.3: Genesys – a Joint Effort for Facilitated Access to PGRFA

In order to enhance the use of crop samples conserved in gene banks worldwide by making them readily available to agricultural researchers and breeders, the Secretariat of the International Treaty has joined forces with the Crop Trust and Bioversity International for the establishment of a global information technology system on PGRFA: Genesys.

Genesys is a global database that brings together the passport, characterization and evaluation data that describe PGRFA contained in regional and national crop databases. By the end of 2010 Genesys allowed plant breeders to locate and search for specific traits of almost 2.4 million samples of PGRFA held in *ex situ* collections around the world.

The ambition of this joint effort is to have one single entry point that would allow searching the totality of the about 7 million PGRFA samples contained in *ex situ* collections worldwide.³⁵

The Genesys database is available at: <http://www.genesys-pgr.org/>.

date the Crop Trust has focused on the following main activities to strengthen the global system of *ex situ* conservation:³⁶

- regeneration, characterization, documentation and safety duplication of endangered samples of PGRFA held by gene banks in developing countries;
- screening of gene bank collections;
- research into better means for conserving vegetatively propagated samples; and
- the development of information technology systems to improve gene bank management and enhance the ability of breeders and researchers to search specific samples of PGRFA held by gene banks globally.

5.3.3. The CGIAR Centres

In 1994, the CGIAR Centres concluded agreements with FAO to place their collections of germplasm under the auspices of FAO for the benefit of the international

community. It was understood that these agreements were transitory, pending completion of the negotiations on the International Treaty.³⁷

Through the International Treaty, its Contracting Parties recognize the importance of the *ex situ* collections of PGRFA held by the CGIAR Centres and called upon them to sign agreements with the Governing Body to make their collections available under the conditions of the Multilateral System.³⁸ The CGIAR Centres did so in October 2006.³⁹ Up to date the germplasm collections of the CGIAR Centres make up the bulk of the crop genetic material placed under the Multilateral System; thereby, the CGIAR Centres have played a crucial role in making the Multilateral System functional.

Close collaboration between the International Treaty and the CGIAR Centres continues also on other levels. Among other things, the

³⁵ FAO (2010), p. 68.

³⁶ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009).

³⁷ Moore and Tymowski (2005), p. 76.

To learn more about the role of the CGIAR Centres in the origins of the International Treaty refer to lesson 3 of this module (History of the International Treaty).

³⁸ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 15.

³⁹ Similar agreements have also been signed with other international institutions holding important collections, such as CATIE, the Mutant Germplasm Repository of the FAO/IAEA Joint Division, the Secretariat of the Pacific Community (SPC), and two of the COGENT centres.





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CGIAR Centres and the Secretariat of the International Treaty mutually invite each other to their meetings, and cooperate in areas such as the development of information technology systems including PGRFA databases and tools for the management of Standard Material Transfer Agreements entered into under the Multilateral System.⁴⁰

Together they also provide legal and technical assistance to facilitate the implementation of the International Treaty in developing countries under the FAO/Bioversity International Joint Programme for Capacity Building (hereafter “Joint Programme”).⁴¹ The Joint Programme assists developing countries in the drafting and implementation of laws and administrative processes, and organizes capacity-building workshops for government officials, politicians, farmers and other stakeholder groups of the International Treaty.

5.3.4. The Commission on Genetic Resources for Food and Agriculture

The International Treaty and the Commission are historically very closely linked. The International Treaty was negotiated in the Commission and the Commission acted as the Interim Committee for the International Treaty until 2006.⁴²

The Commission was originally established as the ‘Commission on Plant Genetic Resources’, in 1983, with the mandate to oversee the International Undertaking on Plant Genetic Resources (hereafter “International Undertaking”). In 1995 the FAO Conference broadened the Commission’s mandate to cover all components of biodiversity of relevance to food and agriculture, including crops, farm animals, aquatic organisms, forest trees, micro-organisms and invertebrates. Accordingly, the Commission was renamed ‘Commission on Genetic Resources for

⁴⁰ The forthcoming Module IV of this series will provide information on the Secretariat’s activities related to information technology systems.

⁴¹ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009).

⁴² To learn more about the role of the Commission in the origins of the International Treaty refer to lesson 3 of this module (History of the International Treaty).



Food and Agriculture'. The main objectives of the Commission are to ensure the conservation and sustainable utilization of genetic resources for food and agriculture, as well as the fair and equitable sharing of benefits derived from their use, for present and future generations.

In 2009, the Governing Body of the International Treaty and the Commission have adopted a joint statement of intent that lays down the main areas of collaboration between the two bodies and their respective Secretariats. The joint statement notably foresees that the Chairs of one body will be invited to participate in sessions of the other body and that they may request to put an item on the agenda of the other body, as appropriate. The Chairs and Bureaus of the two bodies maintain contact in order to promote synergy in the implementation of the programmes of work of the two bodies, and the Bureaus of both bodies

meet jointly to address matters of common interest. Furthermore, the Secretariats of the International Treaty and of the Commission meet regularly to exchange information and to promote coherence in the implementation of their respective programmes of work, and they cooperate in the preparation of documents and meetings for their respective bodies and subsidiary processes.⁴³

5.3.5. The World Intellectual Property Organization

The World Intellectual Property Organization (WIPO) is a specialized agency of the United Nations. It was established by the WIPO Convention in 1967. WIPO is dedicated to developing a balanced and accessible international intellectual property system, which rewards creativity, stimulates innovation and contributes to economic development while safeguarding the public interest.

Box 5.4: The WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore

The WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (WIPO IGC) is an international negotiation forum with the objective of reaching agreement on legal text for the effective protection of traditional knowledge, traditional cultural expressions and genetic resources. It was established by the WIPO General Assembly in October 2000.⁴⁴

In the course of its work related to genetic resources, WIPO IGC has been discussing options for defensive protection of genetic resources which might be of relevance to the International Treaty. The term 'defensive protection', when applied to genetic resources, refers to measures aimed at preventing the acquisition of IPR over genetic resources by parties other than the legitimate holders of these genetic resources.

Possible options for defensive protection put forward by WIPO IGC include databases and information systems on genetic resources. Information technology systems have been developed under the International Treaty which store data of the standard material transfer agreements that providers and recipients of PGRFA from the Multilateral System enter into. These information technology systems could contribute to and would be in line with such options for defensive protection of genetic resources as those under discussion by WIPO IGC.⁴⁵

⁴³ FAO (2009).

⁴⁴ WIPO (2011).

⁴⁵ Secretariat of the WIPO IGC (2010).





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In 2010 FAO and WIPO signed a Memorandum of Understanding to foster the partnership of the two organizations. One of the areas of technical cooperation identified in the Memorandum of Understanding is notably the implementation of the International Treaty.

Collaboration between the Secretariat of the International Treaty and WIPO has specifically been ongoing in the framework of the International Treaty's *Ad Hoc* Third Party Beneficiary Committee. The Arbitration and Mediation Centre of WIPO has actively supported the work of the *Ad Hoc* Third Party Beneficiary Committee on the preparation of the mediation rules for disputes that may arise between a provider and a recipient of PGRFA in relation to the SMTA.⁴⁶

5.3.6. The CBD

The original mandate given by the FAO Conference in 1993 for the negotiation of the International Treaty was to harmonize the International Undertaking on Plant Genetic Resources (hereafter “International Undertaking”) with the CBD. The question of the International Treaty’s connection with the CBD arose during the final stages of its negotiations. At one point, it was suggested that the International Treaty might become a protocol to the CBD. In the end, this approach was rejected and the International Treaty was adopted as a freestanding independent international agreement under Article XIV of the FAO Constitution. One of the main reasons for this approach was that as the International Treaty is essentially an agricultural

⁴⁶ FAO acts as the Third Party Beneficiary under the SMTA to defend the interests of the Governing Body in the Multilateral System. As such, it has the right to request information on Standard Material Transfer Agreements entered into and can, if necessary, initiate dispute settlement procedures regarding rights and obligations of the provider and the recipient of PGRFA in an exchange of genetic material under the SMTA.

The forthcoming module IV of this series will provide detailed information on the SMTA and the Third Party Beneficiary.



agreement, its necessary technical support would best be ensured by locating it in FAO. However, the International Treaty expressly recognizes the importance of maintaining close links with the CBD.⁴⁷

The Secretariats of the International Treaty and the CBD collaborate in several ways. Notably, they ensure mutual participation at the meetings of their respective governing bodies as well as technical meetings. The aim of this mutual representation is to share experiences with the implementation of both conventions, especially in the areas of conservation and sustainable use of crop

diversity and access and benefit-sharing. They also hold discussions at the margins of their respective meetings on possible areas and further steps of cooperation, at the level of their Secretariats and Bureaus.⁴⁸

In order to consolidate their collaboration, especially in the area of capacity building regarding the harmonious implementation of the Multilateral System and the Nagoya Protocol at the national level, the two Secretariats have signed a Memorandum of Cooperation in October 2010 when the Nagoya Protocol was adopted.

Key points to remember:

- The Crop Trust is an essential element of the Funding Strategy of the International Treaty in relation to *ex situ* conservation and availability of PGRFA. It operates under the overall policy guidance of the Governing Body of the International Treaty.
- The Crop Trust and the Governing Body have entered into a relationship agreement which allows the Governing Body to appoint four members of the executive board of the Crop Trust.
- The eleven CGIAR Centres that hold international collections of PGRFA have entered into agreements with the Governing Body in 2006, to make their collections available under the conditions of the Multilateral System.
- The International Treaty was negotiated in the Commission and the Commission acted as the Interim Committee for the International Treaty until 2006.
- In 2009, the Commission and the Governing Body of the International Treaty have adopted a joint statement of intent for the coordination of their respective programmes of work.
- WIPO and FAO have signed a Memorandum of Understanding in 2010 which identifies the implementation of the International Treaty as an area of technical cooperation between the two organizations.
- The importance of maintaining close links with the CBD is expressly recognized in the text of the International Treaty.
- In order to consolidate their collaboration, the Secretariats of the International Treaty and the CBD have signed a Memorandum of Cooperation in October 2010 when the Nagoya Protocol was adopted.

⁴⁷ Moore and Tymowski (2005), p. 11.

To learn more about the role of the CBD in the origins of the International Treaty refer to lesson 3 of this module (History of the International Treaty).

⁴⁸ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009).





5.4. Conclusive Summary

Legal Framework

The realization of the provisions on conservation and on sustainable use of the International Treaty directly contributes to achieving the objectives of the CBD in the area of crop diversity. The Contracting Parties of the International Treaty have agreed to promote the effective implementation of the Global Plan of Action and recognized it as a supporting component of the International Treaty.

The CBD lays down the basic principles for ABS in relation to genetic resources. These principles are further elaborated in the Nagoya Protocol. The Nagoya Protocol acknowledges the fundamental role of the International Treaty, recalling notably its Multilateral System. The genetic material of the food crops and forages that are listed in Annex I of the International Treaty fall under the terms for facilitated exchange of the Multilateral System. For other crop genetic material the terms of access and benefit-sharing of the Nagoya Protocol will apply.

The International Treaty neither bans nor encourages the use of IPR on crop varieties. Generally, while a patent taken out on a new crop variety that includes material from the Multilateral System may trigger the mandatory monetary benefit-sharing requirement, plant breeders' rights under the UPOV Convention would be exempt from this mandatory requirement. However, it all depends on the extent to which these IPR allow for further agricultural research and breeding.

Partnerships

The partnership of the International Treaty with the Crop Trust is laid down in an official relationship agreement which recognizes the Crop Trust as an essential element of the International Treaty's Funding Strategy and places it under the overall policy guidance of the International Treaty.

By including their *ex situ* collections in the Multilateral System, the CGIAR Centres have contributed in a crucial way to make the Multilateral System operational. Cooperation between the International Treaty's Secretariat and the CGIAR Centres is ongoing notably in the areas of capacity building for the effective implementation of the International Treaty and the development of information technology systems.

The Governing Body of the International Treaty and the Commission have adopted a joint statement of intent in order to foster the cooperation between their two respective Governing Bodies and Secretariats.

The Memorandum of Understanding between FAO and WIPO identifies the implementation of the International Treaty as an area of technical cooperation between the two organizations.

The International Treaty and the CBD have signed a formal Memorandum of Cooperation in order to consolidate their collaboration, especially in the area of capacity building regarding the harmonious implementation of the Multilateral System and the Nagoya Protocol at the national level.



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A Global Treaty for Food Security in an Era of Climate Change



LESSON 1



Learning objectives

At the end of this lesson, the learner will:

- have an overview of the global challenges of crop diversity loss, food security and climate change;
- understand how these three challenges are interlinked;
- be familiar with the special nature of crop diversity compared to other components of biodiversity and understand why this calls for a special set of regulations; and
- know how the International Treaty addresses the triple challenge of crop diversity loss and food security in the context of climate change.



Target learner groups

Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Triticum durum, durum wheat, by Elizabeth Blackwell (1739)

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1.1. Overview of the Lesson

This lesson showcases the importance of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”) for coping with the global challenges of crop diversity loss, food security and climate change.

By laying down the importance of the conservation and the sustainable use of crop diversity to food security and therefore to human survival – all the more in the context of climate change – the lesson highlights how the three issues are closely interlinked. It will become clear that a multilateral policy solution is needed to counter these problems that threaten humanity as a whole.

The fact that climate change has far-reaching impacts on agriculture does not yet seem to be fully reflected in climate change discussions and negotiation forums. This lesson therefore focuses on the impacts of climate change on crop production, and on the crucial role of crop diversity for climate change adaptation in agriculture. It further shows how the International Treaty facilitates adaptation through its four main components:

- Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture;
- Farmers’ Rights;
- The Multilateral System of Access and Benefit-sharing; and
- The Funding Strategy.

The first part of the lesson provides an up-to-date overview of trends and scenarios of the three challenges. Building on that, the second part starts by presenting the rationale for a specific multilateral policy framework for crop diversity. The main components of the International Treaty will be introduced to highlight their importance for countering the loss of crop diversity and using it more effectively to achieve and maintain food security under the growing pressures of climate change.

After completion of this lesson the learner will be fully aware of the policy relevance of the International Treaty. He or she will also acquire a notion of the policy tools the International Treaty offers to cope with the global challenges of the 21st century. In addition, the brief overview of the International Treaty’s main components constitutes an introduction to lesson 4 of this module (Main Components and Governance of the International Treaty).



1.2. An Introduction to the Global Challenges of the 21st Century

1.2.1. Crop Diversity

Basic Facts

In the 1950s, plant breeders were the first to start using the term ‘genetic erosion’, indicating the gradual but serious loss of crop diversity. Interestingly enough, the emergence of the term coincided with the adoption of major changes in agricultural production systems globally to keep up with the growing world population. In the course of this process – which came to be commonly referred to as the ‘Green Revolution’ – many traditional crop varieties were replaced by modern improved varieties. In combination with industrial fertilizers and pesticides, these improved varieties brought about the significantly higher crop yields that were urgently needed at that time.

The replacement of traditional crop varieties by modern varieties was and remains one of the major factors affecting crop diversity in production systems.¹ Recent research confirms that genetic erosion did indeed take place at the time of the shift from traditional to more intensified production. In contrast to traditional farming systems where agricultural inputs were mainly produced by farmers, the modern production systems required farmers to purchase improved seeds, fertilizers and pesticides as external inputs. As a consequence, the practice of saving seed for subsequent cultivation was broadly abandoned and many locally adapted varieties were lost. In the decades that followed, other factors directly and indirectly linked to the Green Revolution further contributed to the loss of diversity between and within crops.



Courtesy Flickr/Nicholas T.

¹ FAO (2010), p. 44.



Such factors included the mechanization of production processes, the increasing corporate concentration in the seed industry, the opening of agricultural markets to international trade, uniformity requirements set by the food industry and a growing homogenization of food cultures worldwide.²

According to the Food and Agriculture Organization of the United Nations (FAO), more than 75 percent³ of global crop diversity has disappeared irrevocably over the 20th century!⁴ Some progress has been achieved over the last decade with regard to the conservation of samples of crop varieties in gene banks. The state of crop diversity in farmers' fields and in natural surroundings, however, is far less clear and remains a cause for concern for numerous crops in most countries. Notably, a large number of wild relatives of important food crops are likely to disappear over the next decades due to climate change.⁵

1.2.2. Food Security

Basic Facts

FAO member states define food security as achieved when all people, at all times, have access⁶ to sufficient food to meet their dietary needs and food preferences for an active and healthy life.⁷ A glimpse at the current reality is enough to understand that this goal is still far from being achieved and that food security remains a main challenge over the coming decades: out of a total world population of more than 6.8 billion today, over one billion people suffer already from chronic hunger and malnutrition. And the world population is projected to further grow to reach over 9 billion people by 2050. This population growth, coupled with other trends such as rising incomes in emerging countries and increasing urbanization, implies that global food production will have to grow by as much as 70 percent during the same period!⁸

Key points to remember:

- Genetic erosion describes the loss of genetic diversity – both the loss of specific traits within a variety, as well as the loss of entire varieties and species.
- More than 75 percent of global crop diversity has been lost irrevocably over the 20th century.
- Main factors that contributed to this genetic erosion include the following:
 - Replacement of locally adapted varieties by higher-yielding, more uniform varieties;
 - Shift from traditional to intensified production systems;
 - Seed became an external input in agricultural production;
 - Concentration of the global seed industry;
 - International trade in agricultural markets; and
 - Uniformity requirements of the food industry and homogenization of food cultures.

² Visser (2009), pp. 2-3.

³ FAO (2004).

⁴ In South Korea, for example, 74 percent of the most common crop varieties in 1985 had been replaced by 1993, and of the 10 000 wheat varieties in use in China in 1949, only 1000 were still being cultivated in the 1970s.

⁵ FAO (2010), chapter 1, pp. 3-22.

⁶ This includes physical, social and economic access, to food that is both safe and nutritious.

⁷ FAO (2009c), p. 1, footnote 1.

⁸ FAO (2009a), p. 2.





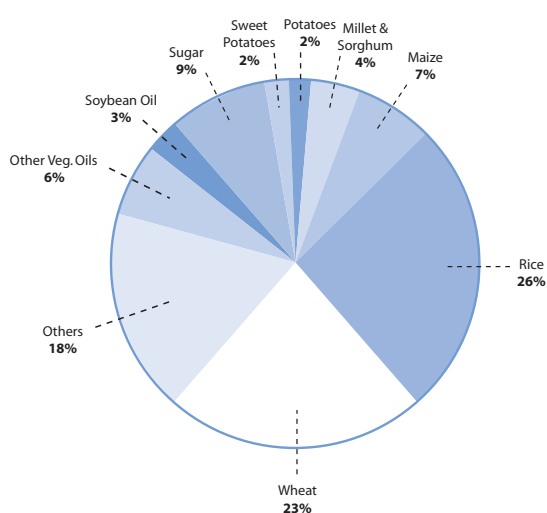
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The Importance of Crop Diversity for Plant Breeding and Food Security

Plant products account for the vast proportion of the world's food supply. Overall, 84 percent of human nutrition comes from plants. In Asia and the Pacific, the Near East and Africa plants provide around 90 percent

of the average human diet. In Latin America and the Caribbean the figure is about 80 percent, and in Europe and North America it tends towards 75 percent.⁹ However, humanity has become dangerously reliant on only a few different crops. Out of the 10 000 to 12 000 known edible plant spe-

Figure 1.1: Most Important Crops for Food Energy Supply



Source: The State of the World's Plant Genetic Resources for Food and Agriculture.¹⁰

⁹ Africa 93 percent, Asia and the Pacific 87 percent, Near East 88 percent, Europe 72.5 percent, Latin America and the Caribbean 81 percent, North America 73 percent. See footnote reference 10.

¹⁰ FAO (2001a).



cies, only 150 to 200 are used by humans and three of them alone – rice, maize and wheat – contribute nearly 60 percent of calories and proteins that humans obtain from plants.¹¹

Meeting the expected increase in food demand by 2050 will not be an easy undertaking. It requires annual cereal production to increase by one billion tons. About half of the average global yield increases for cereals that were achieved under the Green Revolution were attributable to plant breeding. The other half came from altered agricultural practices such as the use of fertilizers and pesticides, irrigation and expansion of cultivated areas. Since the natural resource base on which agriculture relies is finite and in some important respects even declining, these agricultural practices cannot be sustained over the long run. As oil, clean water and arable land become scarcer, their cost as agricultural inputs increases in both financial and environmental terms. This suggests that the role of crop diversity and plant breeding will become even more important in the near future for achieving food security in a sustainable way. Indeed, over 70 percent of the required production increases by 2050 will have to come from higher yields and less than 10 percent can

be expected from an expansion in arable land.¹²

Crop genetic resources contain the essential building blocks that are critical to food security. Their availability is a fundamental requirement for achieving further productivity increases and higher nutritional values through plant breeding.¹³

1.2.3. Climate Change

Basic Facts

At least since the release of the 4th Report of the Intergovernmental Panel on Climate Change (IPCC) it is globally accepted that climate change is an unequivocal fact. Its impacts are already perceptible today and will intensify over the current century. According to the IPCC, the global average temperature will rise between 1.8 and 4 degrees Celsius by the end of the century (compared to an increase of about 0.75 degrees Celsius over the past century). Global and regional weather conditions will become more variable, with more frequent extreme events, expansion of areas with high climate variability and significant changes in precipitation patterns.¹⁴

Key points to remember:

- Food security is achieved when all people, at all times, have physical, social and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.
- Today, over 1 billion people are undernourished (more than 1 person out of 7).
- Globally, 84 percent of the human diet comes from plants.
- To meet the food demand in 2050, global food production has to increase by 70 percent.
- Over 70 percent of this increase in food production will have to come from higher crop yields.
- Crop diversity is essential because agricultural crops and their wild relatives contain the building blocks for crop improvements through plant breeding.

¹¹ FAO (1997), p. 15.

¹² Hegwood (2009), p. 5.

¹³ FAO (2009a), p. 2.

¹⁴ IPCC (2007b), pp. 30-31, 43, 45, 54.





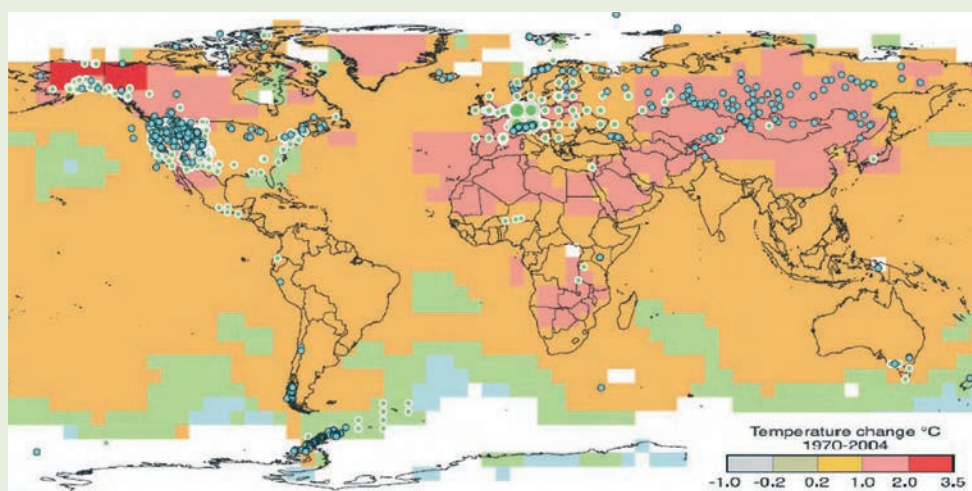
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Impacts on Crop Production

The impact of climate change on agriculture will vary from region to region.¹⁵ Generally, changes in precipitation and rising temperatures are likely to lead to increased incidence and intensity of weeds, pests and diseases in cultivated areas. Higher temperatures are expected to increase the length of the growing season and the total area suitable for cultivation in temperate latitudes,

especially in Europe and North America. However, possible yield gains in these regions have to be set against losses due to the spread of weeds, pests and diseases. Regions in lower latitudes will be most severely affected by a decline in land suitable for cultivation, especially sub-Saharan Africa and the Caribbean. In tropical and subtropical regions extreme seasonal heat is expected to severely lower agricultural outputs.¹⁶

Figure 1.2: Changes in Surface Temperatures 1970-2004



Source: Climate Change 2007 – Synthesis Report.¹⁷

¹⁵ see e.g. Lane and Jarvis (2007).

¹⁶ IPCC (2007a), chapter 5, pp. 273-313.

¹⁷ IPCC (2007b), p. 32.



Whatever the overall impact, one thing is clear: climate change will profoundly alter the present conditions of agriculture in almost all countries. Projections indicate that by 2050 many countries – making up about 35 percent of the global land area – will experience novel climates they have not been exposed to within their borders before.¹⁸ This suggests that climate change is happening so fast that crops and forage varieties in these areas are very unlikely to adapt to it on their own.

Crops that have historically been doing especially well in a given region may no longer be of use and will have to be substituted by other crops: in sub-Saharan Africa for example, where maize is a major staple food crop at present, the land may not be suitable anymore for its cultivation by 2050.¹⁹

Importance of Crop Diversity for Adaptation to Climate Change

Besides substituting and introducing new crops, there is an increasing urgency for adapting crop varieties to future climate conditions through plant breeding. The development of varieties with greater tolerance to drought, flooding and extreme temperatures, as well as

resistances to pests and diseases, is key in the context of climate change.²⁰ Because of the likelihood that climate change will result in future growing conditions beyond the parameters in which local crop diversity has developed, adaptation breeding will increasingly require access to appropriate crop genetic resources from outside national borders.²¹ Exchange of crop genetic material among countries is thus of paramount importance for climate change adaptation.²²

As future climate conditions are not entirely predictable, it is crucial to conserve as wide as possible a spectrum of crop varieties and to secure a genetic base that is in itself as broad as possible. Once a crop variety or its wild relatives are extinct, its particular traits – which might become vital for future climate change adaptation – will be lost forever!

1.2.4. The Interlinkages between Crop Diversity, Food Security and Climate Change

From the above, it becomes clear that crop diversity, food security and climate change

Key points to remember:

- Climate change is an unequivocal fact.
- Global mean temperatures will rise between 1.8 and 4 degrees Celsius by the end of the 21st century, causing more variable weather conditions and more frequent extreme events.
- The incidence and intensity of weeds, pests and diseases in cultivated areas will increase.
- Climate change will alter the conditions of agriculture in almost all countries.
- Climate change is happening so fast that agricultural crops in most areas will not be able to adapt to it on their own.
- Therefore, the urgency for adapting crop varieties to future climate conditions through plant breeding is increasing.
- In this context, access to crop genetic resources from outside national borders for agricultural research and breeding will become ever more important.

¹⁸ Grugel (2009), p. 3.

¹⁹ IPCC (2007a), chapter 5, pp. 273-313.

²⁰ Lane and Jarvis (2007), p. 1.

²¹ FAO (2009b).

²² Grugel (2009), p. 4.



are closely linked in diverse and complex ways. In fact, we are facing a triple challenge that consists in countering the loss of crop diversity and using it more effectively to achieve and maintain food security under the growing pressures of climate change.

Agricultural crop varieties and the particular traits they contain form the very base of our food security. In this sense crop diversity is a precondition for food security, so the challenge of food security cannot be met if crop diversity is not conserved.

The challenge of food security consists in simultaneously lifting one billion people out of poverty and hunger while increasing global food production to meet the needs of a larger and wealthier world population.²³ New plant breeding strategies will therefore have to aim at improving economic and environmental sustainability by developing crop varieties that produce higher yields with less use of expensive and potentially harmful industrial inputs. All of this will place increased demands on the availability of a wide range of crop genetic material.

While climate change is one of the drivers of crop diversity loss, it is also an important reason to conserve agricultural crop varieties, exchange them and use them in a sustainable way. The broader the genetic base we can rely on, the better equipped we are to adapt to changing climate conditions and to guarantee global food security. But there is urgency to act: whereas climate change is occurring at a fast pace, the process for breeding a new crop variety may take from seven up until 15 years.

Agricultural crop varieties are important as a resource that can respond to imminent as well as unknown future challenges. They form a reservoir of particular characteristics that may prove useful for the breeding of new varieties in terms of productivity, pest resistance, drought tolerance and other desirable traits. Meeting such new and unexpected challenges will require increased and continuing exchange of crop genetic material for agricultural research and breeding.²⁴ While many countries may have large gene banks relating to their major crops, there will always be a need for access to a wider range of diversity.



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²³ Hegwood (2009), p. 1.

²⁴ Cooper, Engels and Frison (1994).



Box 1.1: The Irish Potato Famine of the 1840s

On many occasions, breeders have had to go back to the centres of origin of crops in order to find natural resistances to diseases or environmental catastrophes. One such an example is the Irish potato famine of the 1840s when the *Phytophthora infestans* potato blight caused the island's population to fall by between 20 and 25 percent. Dependence on one single staple crop caused the death of approximately one million people, and a million more emigrated from Ireland. Finally, natural resistance to the potato blight had to be sought in the centres of origin in South America in order to save Europe's potato harvests.²⁵



Conserving crop diversity is thus clearly not just a question of preserving a diversity of consumer choices for tomatoes or potatoes: it is a matter of ensuring that tomatoes and potatoes, as well as any other crops, can continue to be available to feed the world!²⁶

²⁵ Moore and Tymowski (2005), p. 4.

²⁶ Sections 1.2.3. (Climate Change) and 1.2.4. (The Interlinkages of Crop Diversity, Food Security and Climate Change) are partly adapted from Moore and Goldberg (2010), p. 7.



1.3. The International Treaty - a Key Instrument to Cope with Global Challenges

The International Treaty is the only operational international agreement of a legally binding nature with the overall goal of achieving global food security through the conservation and the sustainable use of crop diversity. It also regulates exchanges of a number of the most important food crops. It thereby substantially facilitates the access to crop varieties and their components for agricultural research and breeding of new varieties.

In order to better understand the importance of conserving and exchanging agricultural crops, some insight into their special nature compared to other kinds of genetic resources will prove useful. What is it that differentiates crop genetic resources from other components of biodiversity and that requires and justifies a dedicated legal regime, apart from their evident importance for food security?

1.3.1. The Special Nature of Agricultural Crops

The special nature of agricultural crops can be summarized as follows:

- Reliance on *human management*; and
- Countries' *interdependence* on agricultural crops.

Reliance on Human Management

Unlike most other genetic resources, agricultural crops are essentially a man-made form of biodiversity. This means that they are not found in nature on their own and for the most part cannot exist without continued human intervention. Agricultural crops have been created by farmers who have domesticated wild plants over the millennia since the very beginnings of agriculture some 10 000 years ago. Through a continuing process of selection



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and breeding they have been made suitable for agriculture.

Undesirable natural traits – such as shattering of seed-heads prior to maturity – that allow those plants to survive in the wild have been deliberately bred out, while additional traits that were not previously found in a given plant – such as resistance to drought – have been bred in. Any individual crop variety is thus the product of the breeding work of many generations of farmers and breeders, which may stretch across many countries and continents. Without continuing human care most agricultural crops will revert to the wild and may be of little further value to food and agriculture.

The plant breeding process calls for a broad range of crop varieties as inputs into any single successful new variety. At the stage of developing a new commercial variety, breeders may have to screen literally thousands of samples in search of a particular trait. Depending on the crop, they commonly work with up to around 60 different varieties originating from 20 to 30 different countries. This wealth of parentage means that it is difficult to track the origins of any given crop variety.²⁷ It is equally complex to calculate the extent to which any particular trait that has been bred in was instrumental

in producing the specific characteristics of a given new variety.

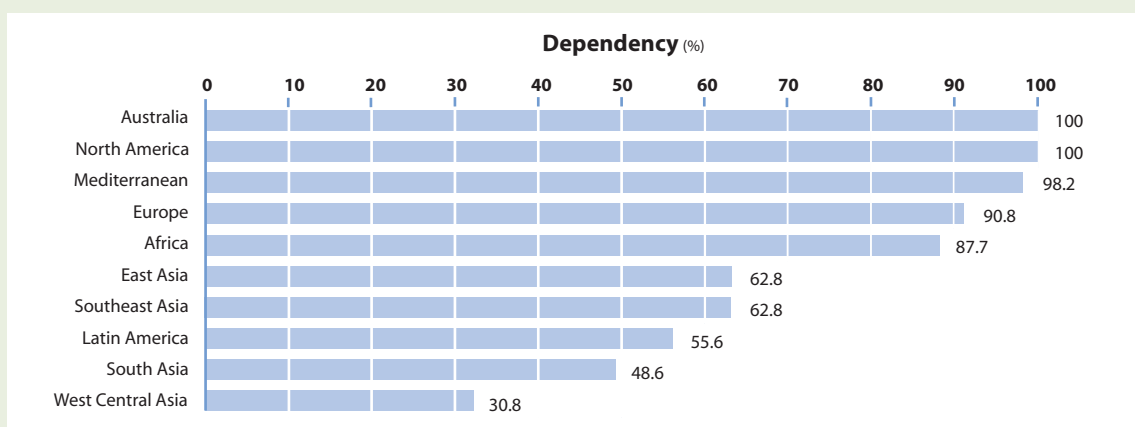
In both these senses, agricultural crop varieties are unlike other forms of biodiversity. Plant varieties used for the development of pharmaceutical products, for example, are generally wild plants that exist in nature. A given pharmaceutical product may often be derived from a single natural source, with human input limited to the knowledge of the properties of the natural sources.

Countries' Interdependence on Agricultural Crop Varieties

Agricultural crops have been freely and widely exchanged across the world regions for centuries: potatoes originated in the Andes in Latin America and are now staple crops in Europe and elsewhere in the world; barley and wheat were first domesticated in the Near East; rice originated in Southeast Asia.²⁸ The exchange of agricultural crops has continued over the ages, with the result that today almost all countries in the world depend heavily on each other regarding crop diversity for their agricultural development.

Unlike the movements of genetic resources for pharmaceutical research on which much

Figure 1.3: Percentages of Food Production of Major Crops Based on Species Originating from Other Regions



Source: The State of the World's Plant Genetic Resources for Food and Agriculture.²⁹

²⁷ Fowler (2003).

²⁸ FAO (2001b).

²⁹ FAO (1997), p. 23.



Table 1.1: Indicators of Global Interdependency of Selected Crops

Crop	Region(s) of significant genetic diversity	Major <i>ex situ</i> collections	Major producing collections	Major breeding and research activities	Countries for which major consumption has been recorded	Products/ importing countries
Eggplant (<i>Solanum melongena</i>)	Indo-Myanmar region	AVRDC, India	China, India, Egypt, Turkey, Indonesia	AVRDC, India	African countries, China, India, Indonesia, Malaysia, Nepal, Pakistan, Sri Lanka	France, Germany, Iraq, United Kingdom, United States of America
Groundnut (<i>Arachis hypogea</i>)	South America	CGIAR, USDA, India, China, Senegal, Brazil	China, India, Indonesia, Nigeria, United States of America	Australia, Brazil, China, India, United States of America	Confectionary China, India, Indonesia, Nigeria, United States of America	Groundnut shelled Canada, Mexico, Netherlands, Russian Federation, United Kingdom
Maize (<i>Zea mays</i>)	Asia, Central America and Mexico, North America, South America	CGIAR, India, Mexico, Russian Federation, United States of America	Argentina, Brazil, China, Mexico, United States of America	CGAR, Africa, Brazil, China, Europe, India, United States of America	China, India, Indonesia, Mexico, South Africa	China, Japan, Mexico, Republic of Korea, Spain

Source: The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.³⁰

media focus has been put in recent years because they often occur one-sidedly from genetically rich countries in the South to industrialized countries in the North, in the case of agricultural crops the flow is two-way.

No country or region of the world is entirely self-sufficient in terms of crop diversity needed to sustain and improve its major food crops: the degree of dependence for

the major food crops is over 50 percent for most world regions.³¹

This high degree of interdependence that is illustrated in Figure 1.3 and Table 1.1 is likely to further increase under the growing pressures of climate change. These are the main reasons that called for the adoption of an international agreement which would facilitate access to crop genetic resources for agricultural research and breeding.³²

Key points to remember:

- Unlike most other components of biodiversity, agricultural crops are essentially man-made: they are the product of the breeding work of farmers and breeders over many generations.
- Without continued human management most agricultural crops would revert to the wild and be lost.
- It is difficult to track the exact origins of crop varieties because generally they incorporate traits from many different varieties from different regions.
- All countries in the world depend on each other regarding crop diversity for agricultural research and breeding.
- Global interdependence on crop genetic resources will further increase under climate change.
- Because of their special nature compared to other components of biodiversity, the International Treaty facilitates the access to crop varieties and their components for agricultural research and breeding of new varieties.

³⁰ FAO (2010), p. 19.

³¹ In Central Africa the interdependence ranges from 67 percent to 94 percent and in the Indian Ocean countries from 85 percent to 100 percent. At the other end of the scale we have for example Bangladesh where the figures range from 14 percent to 21 percent.

³² Section 1.3.1. (The Special Nature of Agricultural Crops) is adapted from Moore and Goldberg (2010), pp. 3-5.



1.3.2. The Policy Contribution of the International Treaty

Now that the learner is aware of the fact that crop diversity is instrumental to cope with the challenges of food security and climate change and has understood the special nature of crop genetic resources that calls for specific regulations for facilitated exchange, it is time for a closer examination of the policy contribution of the International Treaty.

In its Objectives

The objectives of the International Treaty are laid down in its Article 1. There we find the first and most evident reference to the challenges. In fact, the overall goal of the International Treaty is the achievement of food security. This goal is to be attained through the conservation and the sustainable use of crop genetic resources, and the fair and equitable sharing of the benefits that may arise from the use of these

resources. While lesson 2 of this module (Objectives, Scope and Basic Concepts) will go into more detail with regard to the objectives of the International Treaty, its policy link to both the crop diversity and the food security challenge is herewith clearly established.³³

In its Main Components

Lesson 4 of this module (Main Components and Governance of the International Treaty) will give a clear overview of the International Treaty's main components. However, we will at this point already take a preview on them.

Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture

Articles 5 and 6 of the International Treaty provide guidance to countries regarding measures and activities to be undertaken that promote the conservation and the sustainable use of crop diversity.



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³³ International Treaty on Plant Genetic Resources for Food and Agriculture (2001).



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An important component of the provisions contained in Article 5 (related to conservation) is the characterization and evaluation of crops and their potentially useful traits. This will notably help agricultural researchers and breeders to spot the particular characteristics they need for the development of new varieties. The article also puts forward a complementary approach to conservation of agricultural crops both in the fields as well as in gene banks.

The provisions of Article 6 (related to sustainable use) focus, *inter alia*, on the importance of maintaining diverse farming systems and on implementing participatory approaches to plant breeding – including collaborations between researchers and farmers for the development of locally adapted varieties. They also promote on-farm management of crop diversity to reduce genetic erosion and increase world food production in a sustainable way.

Farmers' Rights

A distinguishing feature of the International Treaty is the fact that Article 9 recognizes the enormous contribution of generations of local and indigenous communities and farmers around the world over thousands of years in conserving and expanding the genetic diversity of crops. Through this recognition of Farmers' Rights, the International Treaty aims at supporting farmers in managing and conserving crop diversity on their farms.³⁴

The implementation of Farmers' Rights is largely a matter for national governments. Therefore, Article 9 proposes a number of measures to protect and promote Farmers' Rights at the national level. These include measures for the protection of traditional knowledge relevant to crop diversity, the right to participate in sharing benefits that may arise from the utilization of crop diversity, and the right to participate in

³⁴ Hegwood (2009), p. 3.





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national decision-making processes related to crop diversity.

The Multilateral System of Access and Benefit-sharing

The Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”) is established by Articles 10-13. It is often referred to as the core of the International Treaty. The Multilateral System can be thought of as a global pool of a number of the most important crop genetic resources for food security, shared and managed jointly by all countries that adhere to the International Treaty.

Countries grant each other facilitated access to these crop genetic resources for agricultural research and breeding activities in exchange for a commitment to share the benefits that may arise from their subsequent use. The crops that form part of the Multilateral System are defined in the list that is commonly referred to as ‘Annex I’. Together, the crops

listed in Annex I account for more than 80 percent of human calorie intake from plants.

Placing collections in the Multilateral System will promote their use by a much wider community. The Multilateral System provides a transparent and reliable framework for the exchange of the crop genetic resources that are contained in the global gene pool. It thereby greatly facilitates their conservation and favours exchange between and within regions with similar climate conditions. This, in turn, contributes to speeding up the use of these crop genetic resources for agricultural research and breeding of new crop varieties that achieve higher yields and nutritional values and that are adapted to new climate conditions.³⁵

The Funding Strategy

In its Article 18 the International Treaty establishes the base for a strategy to facilitate the mobilization of funds for its own functioning and the realization of its



³⁵ Hegwood (2009), p. 2, Grugel (2009), pp. 5-7 and Visser (2009), pp. 5-7.



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objectives (hereafter “Funding Strategy”). The Funding Strategy recalls that the various Contracting Parties dispose of uneven capacity and financial resources, and calls especially upon Contracting Parties that are developed countries to effectively allocate resources for the conservation and sustainable use of crop diversity worldwide.

The centre piece of the Funding Strategy is its so-called ‘Benefit-sharing Fund’. This is a multilateral fund that collects financial resources which are used to support initiatives aimed at the conservation and the sustainable use of crop diversity. Financial resources from the Benefit-sharing Fund are primarily allocated to projects in developing countries that have a focus on helping ensure sustainable food security by assisting farmers to adapt to climate change.³⁶

Many developing countries feel dependent on the availability of external financial resources for the elaboration and imple-

mentation of national programmes or plans for the conservation and sustainable use of crop diversity. The Benefit-sharing Fund provides the mechanism with the potential to overcome this obstacle to the realization of the objectives of the International Treaty.³⁷

The effective implementation of the International Treaty’s objectives and its main components is thus critical to cope with the challenges of the 21st century.

Notably, the Multilateral System facilitates availability of and access to a number of the most important crop genetic resources for food security. Through this facilitated exchange it boosts agricultural research and breeding activities for the development of high-yielding and more nutritious crops that are better adapted to new and extreme climate conditions. This, in turn, contributes significantly to addressing the food security and climate change challenges.

³⁶ In 2010, the Benefit-sharing Fund was officially incorporated as an option for adaptation funding in the adaptation funding interface of the United Nations Framework Convention on Climate Change (UNFCCC).

³⁷ Visser (2009), pp. 5-7.





The Funding Strategy enhances the provision of financial resources for the implementation of the International Treaty at the international, regional and national level. It supports countries in the elaboration and implementation of national programmes or plans for the conservation and sustainable use of crop diversity and in developing and

maintaining the technology and human capital needed to allow for the functioning of the Multilateral System. The Benefit-sharing Fund of the Funding Strategy, in particular, supports initiatives in developing countries that aim at achieving food security in the context of climate change through the conservation and the sustainable use of crop diversity.

Key points to remember:

The International Treaty provides an effective policy response to the global challenges of crop diversity loss, food security and climate change, through:

- its comprehensive provisions providing guidance to countries regarding the measures and activities to be undertaken at the national level for the conservation and the sustainable use of crop diversity;
- its provisions on Farmers' Rights which aim at supporting farmers and local and indigenous peoples in conserving crop diversity on their farms;
- the Multilateral System that facilitates access to a global gene pool of crop genetic resources for agricultural research and breeding of new crop varieties that may achieve higher yields and nutritional values and that are adapted to new climate conditions; and
- the Benefit-sharing Fund of the Funding Strategy supports initiatives for the conservation and the sustainable use of crop diversity in developing countries, with a focus on helping ensure sustainable food security by assisting farmers adapt to climate change.





1.4. Conclusive Summary

The International Treaty is the key policy instrument for coping with the triple challenge of countering the loss of crop diversity and using it more effectively to achieve and maintain food security under the growing pressures of climate change.

With global average temperatures rising between 1.8 and 4 degrees Celsius until the end of the century, climate change will alter current growing conditions dramatically. Over one billion people are already suffering from chronic hunger and malnutrition today, and the world population continues to grow to reach over nine billion by 2050. The availability of a broad genetic base of agricultural crop varieties – a diversity of which 75 percent has already been lost forever – is most crucial to breed crop varieties that achieve higher yields and are adapted to new climate pressures.

Therefore, existing crop diversity must be conserved and crop genetic resources need to be broadly available for research and breeding activities. Agricultural crops and the traits they contain (e.g. drought resistance, pest resistance, high yields) are the building blocks which constitute the very base of our food security. The broader the genetic base we can rely on, the better equipped we are to adapt to changing climate conditions in order to guarantee global food security.

Agricultural crops are different from other components of biodiversity because they depend on continued human management. Every country relies on crop genetic material

that has originated in other countries. This interdependence will further increase under the growing pressures of climate change.

The International Treaty confronts the triple challenge through its four main components:³⁸

- With its provisions on **Conservation and Sustainable Use** of Plant Genetic Resources for Food and Agriculture the International Treaty provides the legal framework for the creation of national legislations and policies to ensure that agricultural crops are preserved and continue to be cultivated and used.
- Its provisions on **Farmers' Rights** that aim at supporting local and indigenous communities and farmers in managing and conserving crop diversity on their farms.
- The **Multilateral System** of Access and Benefit-sharing pools samples of a number of the world's most important agricultural crops for food security and makes them available for agricultural research and breeding, which is key for increasing yields and adapting to climate change.
- The aim of the **Funding Strategy** is to enhance the availability of resources for the realization of the International Treaty's objectives. The Benefit-sharing Fund supports initiatives in developing countries that help ensure sustainable food security by assisting farmers to adapt to climate change.

³⁸ For a more detailed and complete introduction to the main components of the International Treaty refer to lesson 4 of this module (Main Components and Governance of the International Treaty).



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Objectives, Scope and Basic Concepts



LESSON 2



Learning objectives

At the end of this lesson, the learner will:

- be familiar with the basics of the International Treaty;
- have an overview of the objectives and the scope of the International Treaty;
- be aware of the main advantages of being a Contracting Party of the International Treaty; and
- understand the basic terms and concepts specific to the policy area of crop diversity, and in particular to the International Treaty.

Target learner groups



Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Vicia faba, fava bean, by Elizabeth Blackwell (1739)

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2.1. Overview of the Lesson

Some terms and concepts used in the context of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”) are of a rather technical nature. This lesson, therefore, provides newcomers to the policy area of crop diversity with the basics of the International Treaty.

The first part of the lesson familiarizes the learner with the objectives and the scope of the International Treaty and presents an overview of the main advantages for countries of being a member of the International Treaty.

The second part focuses on the basic vocabulary used in the broader biodiversity policy area and in the context of the International Treaty more specifically. Technical terms are defined and explained in an easily understandable language. This part can also be used independently as a glossary.

After completion of this lesson, it is expected that the learner will be able to fully comprehend the terms and concepts used in the other lessons of this introduction module. It will also improve his or her understanding of the text of the International Treaty and other related official documents.



2.2. The International Treaty at a Glance

The International Treaty is a legally binding agreement between countries. It aims at countering the loss of crop diversity and enhancing the use thereof, with the ultimate goal of achieving global food security.

After a long negotiation process the International Treaty was adopted by Resolution 3/2001 of the Thirty-first Session of the Conference of the Food and Agriculture Organization of the United Nations (FAO) in November 2001 and entered into force in June 2004. By the end of 2010, more than 126 countries had become members of the International Treaty. This short ratification process and rapid increase in membership is a strong indication of the relevance of the International Treaty.¹

This first part of the lesson will take a closer look at what the International Treaty is about

and why it is important for governments to be part of it.

2.2.1. Objectives and Scope of the International Treaty

Objectives

With the ultimate goal of achieving sustainable agriculture and global food security, the International Treaty pursues the following three main objectives:²

- Conservation of plant genetic resources for food and agriculture (PGRFA);
- Sustainable use of PGRFA; and
- Sharing the benefits arising from the use of PGRFA in a fair and equitable way.



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¹ For a constantly updated list of Contracting Parties see: <http://www.fao.org/Legal/treaties/033s-e.htm>.

² International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 1.



Generally speaking, PGRFA are plants that are of value to human nutrition and used in agriculture – often simply referred to as ‘crops’ – including their parts and components, such as seeds or genes. The International Treaty proposes a set of measures for countries to implement at the national level to conserve their PGRFA and use them more effectively and in a sustainable way.

To enhance the conservation and the sustainable use of crop diversity, the International Treaty creates a system which facilitates exchanges of PGRFA for purposes of agricultural research and breeding: the Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”). As its full name suggests, the Multilateral System is also the main mechanism that

promotes the sharing of benefits which are generated through the use of PGRFA in a fair and equitable manner among countries and stakeholders.³

Scope

The International Treaty is clear and brief in its Article 3, stating: “this Treaty relates to plant genetic resources for food and agriculture”.⁴

The International Treaty thus establishes a framework for the conservation and the sustainable use of **all** PGRFA, including also wild plants from which crops are derived (referred to as “Crop Wild Relatives” or CWR). It does not apply, however, to plant genetic resources that are of no value to food and agriculture.⁵

Key points to remember:

- The International Treaty is a legally binding agreement between countries.
- The International Treaty was adopted by the FAO Conference in November 2001 and entered into force in June 2004.
- The main objectives of the International Treaty are the conservation and the sustainable use of PGRFA, and the fair and equitable sharing of benefits that arise from the use of these resources.
- The International Treaty establishes a framework for the conservation and the sustainable use of all PGRFA.
- By the end of 2010, more than 126 countries had become members of the International Treaty.

³ For definitions and more detailed explanations of the employed terms and concepts please refer to part two of this lesson (Terms and Definitions). For more information on the International Treaty’s provisions on Conservation and Sustainable Use and the Multilateral System please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

⁴ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 3.

⁵ The fact that the scope of the International Treaty covers all PGRFA is important to highlight in order to avoid confusion with the coverage of the Multilateral System. In fact, whereas the International Treaty as a whole applies to all PGRFA, its Multilateral System regulates the terms of access and benefit-sharing of a specific list of a number of the most important food crops and forages. The list is contained in Annex I of the International Treaty. For more details on the Multilateral System please refer to part two of this lesson (Terms and Definitions – a Glossary) and to lesson 4 of this module (Main Components and Governance of the International Treaty).



2.2.2. Main Advantages of Being a Contracting Party of the International Treaty

In the language of the International Treaty member countries are called ‘Contracting Parties’. On a general level, Contracting Parties profit from the guidance provided by the International Treaty for the elaboration of national laws and policies related to crop diversity. A main direct advantage is that agricultural researchers and breeders of a Contracting Party enjoy facilitated access to the global pool of crop samples of the Multilateral System. At the same time Contracting Parties and stakeholders based within their borders have the possibility to receive a share of the benefits that arise from the use of these crops. On the political level, a Contracting Party can ensure that its national needs and interests related to PGRFA are taken into consideration by the international community.

Countries that are not Contracting Parties of the International Treaty, on the contrary,

do not enjoy all of these advantages. In particular, they are not eligible to receive financial support under the benefit-sharing mechanism of the Multilateral System, and they do not receive support in the form of capacity building.

Facilitated Access to the Global Gene Pool

All countries of the world highly depend on each others’ PGRFA for their sustainable agricultural development.⁶ The most immediate advantage for a Contracting Party is that any natural or legal person under its jurisdiction enjoys easy access to the vast range of crop samples contained in the global gene pool of the Multilateral System for purposes of agricultural research and breeding.

Natural and legal persons include, among others, national gene banks and research institutions, individual breeders and farmers, non-governmental organizations as well as public and private breeding companies.



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⁶ To learn more about countries’ interdependence on PGRFA please refer to lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change).





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By the end of 2010 this global gene pool encompassed more than 1.3 million unique samples of crop varieties, and more are continuously being added to it. These samples can be accessed and used for multiplication and subsequent cultivation, for example. Facilitated access to the global gene pool also favours the development of new varieties with higher yields, for instance, or with resistances to stresses induced by climate change, such as drought, salinity or pests.

Thanks to the International Treaty it becomes easier to locate existing crop samples. Contracting Parties and other entities that formally include their samples into the Multilateral System notify the Secretariat of the International Treaty (hereafter “Secretariat”) about their inclusions, and all formal notifications are published online.⁷ In addition, the Secretariat works towards

more efficient coordination and integration of existing web-based catalogues and other information technology systems that make it easier to search for PGRFA.

Another main element of facilitated access under the International Treaty is that complicated procedures and time-consuming negotiations of specific contracts for exchanges of PGRFA are eliminated. A breeder who would like to receive a given crop sample from a certain gene bank collection, for example, can simply do so according to the terms of the Standard Material Transfer Agreement (SMTA).

The SMTA is a standard contract for transfers of crop samples under the Multilateral System which has been negotiated and agreed internationally. It provides transparent regulations and guarantees legal security in exchanges of PGRFA.

⁷ For inclusions of PGRFA into the Multilateral System see: http://www.planttreaty.org/inclus_en.htm.



Sharing the Benefits from the Use of Crop Diversity

Contracting Parties and stakeholders based within their borders have the possibility to receive a share of the benefits that arise from the use of the PGRFA that are exchanged under the Multilateral System. Once crop genetic material has been included in the common gene pool of the Multilateral System, this material falls under the shared competence of all Contracting Parties for the benefit of humanity. Accordingly, a country cannot expect an individual benefit in return from a specific crop sample it has placed in the gene pool. In fact, the benefits that arise from the use of material from the Multilateral System are shared in a multilateral way.

Benefits are shared according to internationally agreed priorities for the conservation and sustainable use of crop diversity and taking into account the needs of Contracting Parties. On this note, the International Treaty foresees that benefits flow primarily to farmers who conserve and sustainably utilize crop diversity, especially in developing countries and countries with economies in transition.

More concretely, the International Treaty foresees the sharing of both non-monetary and monetary benefits arising from the use of the material contained in the Multilateral System.

Options for non-monetary benefit-sharing include:

- *Exchange of information* related to PGRFA, such as inventories, information on technologies and relevant research results;
- *Access to and transfer of technology* for the conservation and sustainable use of PGRFA that are part of the Multilateral System; and
- *Capacity-building* in developing countries, primarily related to conservation and sustainable use, including through developing and strengthening facilities for those purposes, and carrying out scientific research.

The mechanism that regulates the sharing of monetary benefits is called 'Benefit-sharing Fund'. The Benefit-sharing Fund is an international trust fund that invests in high impact projects for the conservation and sustainable use of crop diversity. It has a fundraising target of US\$ 116 million over a five year period ending December 2014.



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Any governmental or non-governmental organization, including gene banks and research institutions, farmers and farmers' organizations and regional and international organizations, based in developing countries that are Contracting Parties to the International Treaty, has the possibility to apply for financial support from the Benefit-sharing Fund.⁸

Having a Say in International Decision-making Related to PGRFA

Contracting Parties meet at least every two years in the ordinary sessions of the Governing Body of the International

Treaty (hereafter “Governing Body”) to take decisions and provide guidance regarding the further implementation of the International Treaty. The Governing Body has positioned itself as a major inter-governmental policy-making body in the area of genetic resources for food and agriculture and it is increasingly gaining importance in other related forums. The fact that the decisions of the Governing Body are taken by consensus ensures that the outcomes are balanced and all Contracting Parties have an equal say in the decision-making process.

Key points to remember:

- Contracting Parties profit from the guidance provided by the International Treaty for the elaboration of national laws and policies related to crop diversity.
- Agricultural researchers and breeders enjoy facilitated access to the global gene pool of the Multilateral System with over 1.3 million crop samples.
- Contracting Parties and stakeholders based within their borders have the possibility to receive a share of the benefits arising from the use of crop diversity – both in monetary and non-monetary terms.
- A Contracting Party can ensure that its national needs and interests related to PGRFA are taken into consideration by the international community.

⁸ Please refer to lesson 4 (Main Components and Governance of the International Treaty) to learn more about the Benefit-sharing Fund in the context of the Funding Strategy.





2.3. Terms and Definitions – a Glossary

This part provides definitions and explanations of some key terms and concepts that are essential for a sound understanding of the International Treaty. It can also be used independently as a glossary. Additional notions are introduced in their respective contexts in the other lessons.

2.3.1. Biodiversity

The term ‘biodiversity’ is short for ‘biological diversity’. Broadly speaking, biodiversity is often presented as the variety of life in all its manifestations and at all levels of

biological organization, from the molecular up to the ecosystem level.⁹

Keeping this in mind will help to understand the legal definition that is contained in the Convention on Biological Diversity (CBD):¹⁰ “‘Biological diversity’ means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.”¹¹



Courtesy Flickr/Orchidgalore

⁹ Gaston and Spicer (2004), p. 4.

¹⁰ The CBD is an international agreement aiming at the conservation and the sustainable use of all biodiversity and benefit-sharing related to the genetic resources that are part thereof. For more information about the relationship of the International Treaty and the CBD please refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

¹¹ Convention on Biological Diversity (1992), Article 2.

With 193 Parties to the CBD, the acceptance of the definition among states can be considered universal. See: <http://www.cbd.int/information/parties.shtml>.



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Species diversity is the most obvious type of biodiversity. A ‘species’ is a group of organisms that can reproduce, such as cats or maize. Within a species, however, there is genetic diversity. Groups of organisms that share a common ancestor and have the same characteristics are identified as a ‘breed’ for animals and as a ‘variety’ for plants. An ecosystem, simply put, is the environment in which species live.¹²

Biodiversity can thus be understood as the variety and variability of animals, plants and micro-organisms at the genetic, species and ecosystem level.

Key points to remember:

- Biodiversity is short for ‘biological diversity’.
- Broadly speaking, biodiversity can be understood as the variety of life in all its manifestations.
- There are three levels of biodiversity: the genetic, species and ecosystem level.

2.3.2. Genetic Resources, Genetic Material and Units of Heredity

The internationally agreed definition of the term ‘genetic resources’ contained in the CBD is that they are “genetic material of actual or potential value”. ‘Genetic material’ is defined as “any material of plant, animal, microbial or other origin containing functional units of heredity”.¹³

‘Heredity’ is the passing of traits to offspring. ‘Units of heredity’ are those parts of a living organism that possess the quality to pass traits, such as DNA or genes. Samples of genetic resources containing units of heredity – such as seeds, pollen, sperm or individual organisms – are called ‘germplasm’.¹⁴

The above definition of genetic resources does not specify the nature of the actual or potential value a genetic resource must possess. In fact, this value may be economic, just as well as it may be scientific, academic or even artistic in nature, for example. Even if a given genetic

¹² CBD Youth Homepage (2008).

¹³ Convention on Biological Diversity (1992), Article 2.

¹⁴ FAO (2001).



resource might not be regarded as valuable at present, it may well become so in the future. Therefore, the term ‘genetic resources’ comprises virtually any genetic material.¹⁵

Genetic resources make up a substantial part of biodiversity. However, they do not include the ecosystem level which is a component of biodiversity. In addition, the term ‘biodiversity’ expresses also the diversity between and within its components, whereas genetic resources comprise only the components themselves.

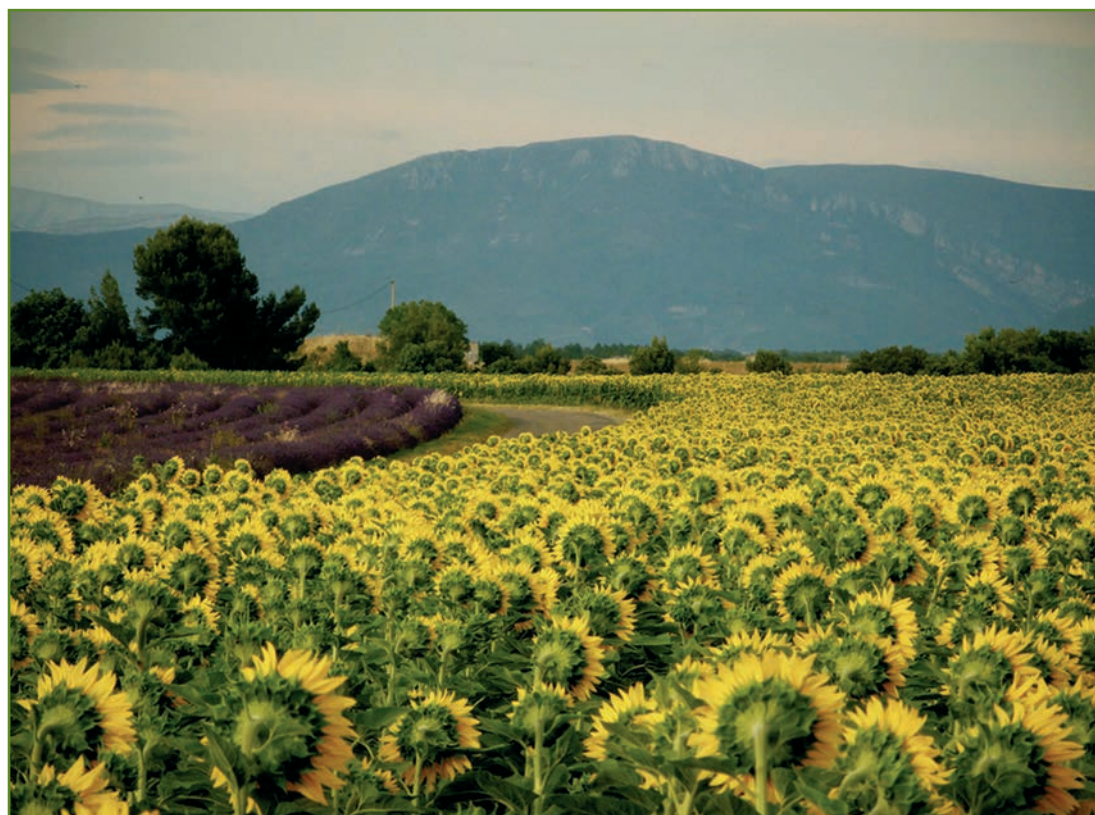
Key points to remember:

- Genetic resources are living organisms or parts thereof that contain functional units of heredity such as DNA or genes.
- Genetic resources are a main component of biodiversity.

2.3.3. Agricultural Biodiversity

‘Agricultural biodiversity’ is a subset of biodiversity, sometimes also referred to as ‘agro-biodiversity’. Broadly speaking, agricultural biodiversity includes all components of biodiversity that constitute agricultural ecosystems (or ‘agro-ecosystems’). In other words, it includes all components of biodiversity that are of relevance to food and agriculture: the variety and variability of animals, plants and micro-organisms which are necessary to sustain key functions of the agro-ecosystem, its structure and processes for, and in support of, food production and food security.¹⁶

In that sense, the term agricultural biodiversity comprehends the variety and variability



Courtesy Flickr/Alpha du centaure



¹⁵ Swiss Academy of Sciences (2006).

¹⁶ FAO (2004).

Key points to remember:

- Agricultural biodiversity includes all components of biodiversity that are of relevance to food and agriculture.

of genetic resources for food and agriculture, such as agricultural crops and their wild relatives, livestock, forest and fishery resources. It furthermore includes the diversity of non-harvested species that support production and agro-ecosystems, such as soil micro-organisms, predators, pollinators, weeds and pests, as well as the diversity of the agro-ecosystems themselves.¹⁷

2.3.4. Plant Genetic Resources for Food and Agriculture

‘Plant genetic resources for food and agriculture’ are for time-saving reasons generally called ‘PGRFA’. The International Treaty defines PGRFA as “any genetic

material of plant origin of actual or potential value for food and agriculture”. The term genetic material is defined as “any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity”.¹⁸

There is quite some analogy between the definition of PGRFA and the one of genetic resources we have seen above. PGRFA fall under the category of genetic resources and are therefore a component of biodiversity. However, PGRFA are exclusively of plant origin, whereas genetic resources in general can also be from animals, for example. The second key difference with regard to genetic resources is that the definition of PGRFA specifies that the nature of the actual or potential value of a plant genetic resource must be of relevance to food and agriculture for it to qualify as a plant genetic resource for food and agriculture.



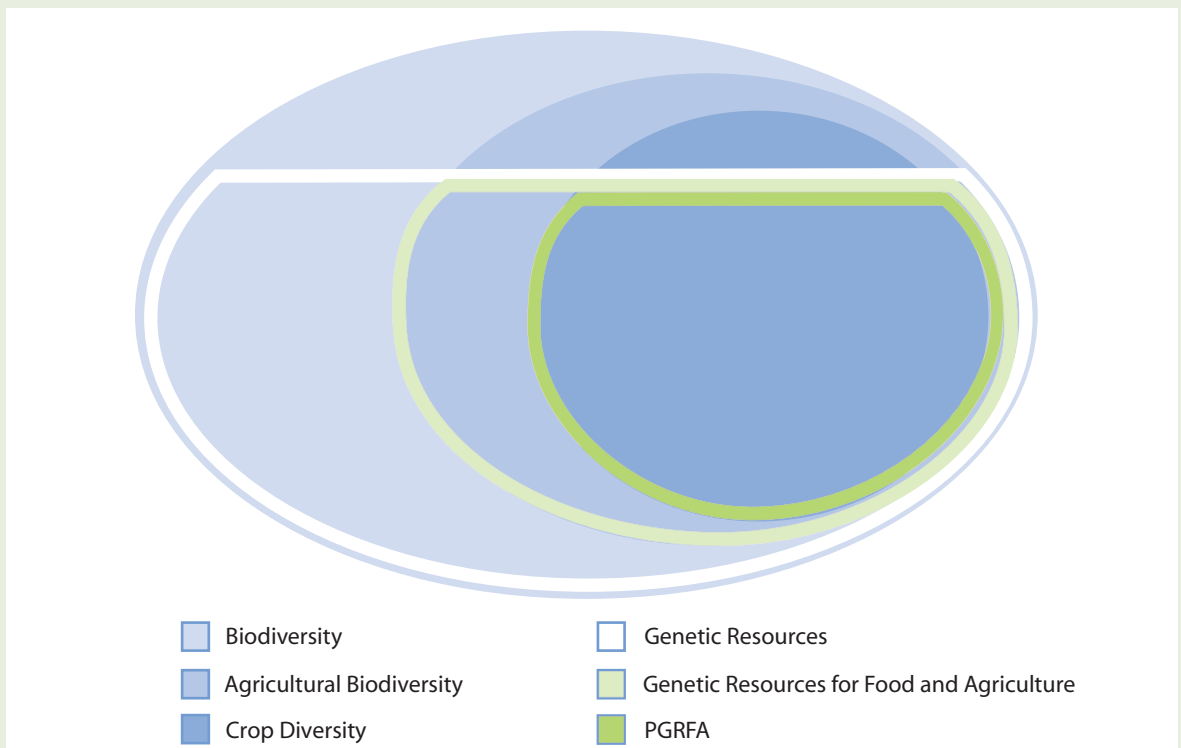
© FAO/Roberto Faidutti

¹⁷ UK Food Group (2008).

¹⁸ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 2.



Figure 2.1: Biodiversity, Agricultural Biodiversity, Crop Diversity, Genetic Resources, Genetic Resources for Food and Agriculture and PGRFA



PGRFA are also often simply called ‘crops’ when referring to entire genera or species of agricultural plants, and ‘crop genetic material’ when referring to samples of reproductive material. The variety and variability of all PGRFA, i.e. the diversity between and within agricultural crops and their reproductive parts, is called ‘crop diversity’.

2.3.5. Crop, Species, Variety and Cultivar

For the purpose of the present educational module and in the text of the International Treaty, the term ‘crop’ can refer to the common language names of both species and genera of PGRFA, depending on the crop in question. In biology, a ‘species’ is a taxonomic rank of classification for a group of organisms that are capable of interbreeding and producing fertile offspring. A genus is a taxonomic rank above the species.

When referring to apples, for example, we are speaking of the entire genus called *Malus*, including all different species of apples, such as *Malus sylvestris* (European Wild Apple) or *Malus sieversii* (Asian Wild Apple). In the case of the eggplant, on the other hand, we are referring to a single species (*Solanum melongena*). In common language, however, both apples and eggplants are ‘crops’.

Key points to remember:

- PGRFA are living organisms of plant origin or parts thereof that are of value for food and agriculture and that contain functional units of heredity such as DNA or genes.
- PGRFA are a component of agricultural biodiversity.
- The term ‘crop diversity’ describes the diversity of PGRFA at the genetic and at the species level.





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A ‘variety’ is a taxonomic rank below that of the species. The International Treaty defines it as “a plant grouping, within a single botanical taxon of the lowest known rank, defined by the reproducible expression of its distinguishing and other genetic characteristics”.

A given crop variety distinguishes itself from other varieties of the same species in its physical appearance, taste or any other trait, however it shares a common ancestor and can normally interbreed with other varieties of the same species. To come back to the example of eggplants, as illustrated in the picture above, there are many varieties of different colors, yet they all belong to the same species.

Many varieties of PGRFA are often also called ‘cultivars’. Cultivar is short for ‘cultivated variety’, and according to the Code of Nomenclature for Cultivated Plants it “is an assemblage of plants that has been selected for a particular character or combination of characters, is distinct, uniform and stable in those characters, and

when propagated by appropriate means, retains those characters”.¹⁹ However, the term cultivar cannot be used as a general synonym for the term variety. It is not a taxonomic rank and applies only to varieties that have been obtained through human intervention and that comply with the criteria of distinctiveness, uniformity and stability, not including varieties of crop wild relatives, for example.

Key points to remember:

- The term ‘crop’ can refer to the common language names both of species and genera of PGRFA, depending on the crop in question (e.g. apple = genus, while eggplant = species).
- ‘Species’ is a taxonomic rank of classification in biology for a group of organisms that are capable of interbreeding and producing fertile offspring.
- ‘Genus’ is a taxonomic rank above species, while ‘variety’ is a taxonomic rank below species.

¹⁹ International Society for Horticultural Plants (2004), Article 2.3.





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2.3.6. *Ex situ* and *In situ* Conservation

‘*Ex situ*’ is a Latin phrase and its literal translation means ‘off-site’. Analogically, ‘*in situ*’ can be translated as in the natural or original place, or ‘on-site’. In the context of PGRFA both expressions are mainly used with regard to the management and the conservation of crops.

The International Treaty defines the two methods as follows:

- “*In situ* conservation means 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.”

- “*Ex situ* conservation means the conservation of plant genetic resources for food and agriculture outside their natural habitat.” Accordingly, “*ex situ* collection means a collection of plant genetic resources for food and agriculture maintained outside their natural habitat.”²⁰

Ex situ conservation describes a conservation method which entails the actual removal of germplasm from the original habitat or natural environment in order to be preserved in facilities such as gene banks. *In situ* conservation is a conservation method that attempts to preserve the integrity of genetic resources by conserving them within the evolutionary dynamic ecosystems of their original habitat or natural environment.²¹

Key points to remember:

- *In situ* conservation refers to the conservation of biodiversity and its components in their natural surroundings.
- *Ex situ* conservation refers to the conservation of genetic resources in facilities outside their natural habitat, such as gene banks.

²⁰ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 2.

²¹ FAO (1999).



2.3.7. Centre of Origin and Centre of Crop Diversity

The two concepts of ‘centre of origin’ and ‘centre of diversity’ are very related but do not express the exact same thing. The International Treaty defines a centre of origin as “a geographical area where a plant species, either domesticated or wild, first developed its distinctive properties.” A centre of crop diversity is defined as “a geographic area containing a high level of genetic diversity for crop species in *in situ* conditions.”²²

The centre of crop diversity can also be the centre of origin for a given species and the two areas do actually in many cases, however not always, coincide. Often, crops achieve higher yields when they are domesticated outside the centre of origin of their wild relatives, and therefore a centre of crop diversity can emerge over time in an area that is not the centre of origin of the crop.²³ In the case of maize, which has its origins in Central America, significant centres of diversity have developed in other regions over time, for example in Asia.

Figure 2.2: Regions of Diversity of Major Cultivated Plants



Source: The State of the World's Plant Genetic Resources for Food and Agriculture.²⁴

²² FAO (1999).

²³ Jennings and Cock (1977), p. 51.

²⁴ FAO (1997), p. 21.





Box 2.1: The Centre of Origin of Maize

Despite its abundance and importance for food security, the biological origin of maize has been a long-running mystery. It does not grow in the wild anywhere on the planet, so its ancestry was not at all obvious. Recently, however, the combined detective work of botanists, geneticists and archeologists has been able to identify the wild ancestor of maize, to pinpoint where the plant originated, and to determine when early people were cultivating it and using it in their diets.

The greatest surprise, and the source of much past controversy in maize archeology, was the identification of the ancestor of maize. Many botanists did not see any connection between maize and other living plants. However, a few scientists working during the first part of the 20th century uncovered evidence that they believed linked maize to what, at first glance, would seem to be a very unlikely parent, a Mexican grass called 'teosinte'. Looking at the skinny ears of teosinte, with just a dozen kernels wrapped inside a stone-hard casing, it is hard to see how they could be the forerunners of maize cobs with their many rows of juicy, naked kernels. Indeed, teosinte was at first classified as a closer relative of rice than of maize.



DEPARTIR, Universidad Nacional Agraria, Nicaragua

In order to trace maize's paternity, botanists rounded up more than 60 samples of teosinte from across its entire geographic range in the Western Hemisphere and compared their DNA profile with all varieties of maize. They discovered that all maize was genetically most similar to a teosinte type from the tropical Central Balsas River Valley of southern Mexico, suggesting that this region was the 'cradle' of maize evolution. Furthermore, by calculating the genetic distance between modern maize and Balsas teosinte, they estimated that domestication occurred about 9000 years ago.

These genetic discoveries inspired recent archeological excavations of the Balsas region that sought evidence of maize use and to better understand the lifestyles of the people who were planting and harvesting it. Researchers excavated caves and rock shelters in the region, searching for tools used by their inhabitants, maize starch grains and other microscopic evidence of maize. In the Xihuatotla shelter, they discovered an array of stone milling tools with maize residue on them. The oldest tools were found in a layer of deposits that were 8700 years old. This is the earliest physical evidence of maize use obtained to date, and it coincides very nicely with the time frame of maize domestication estimated from DNA analysis.²⁵

²⁵ Adapted from Carroll (2010).

2.3.8. Food Security

“Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”²⁶

This is the definition that was reaffirmed in the declaration agreed upon by all FAO member states at the World Summit on Food Security in 2009.

The concept of food security is based on the four pillars of availability, access, utilization and stability:

- *Availability*: sufficient quantities of food of appropriate quality are available.
- *Access*: individuals have the necessary resources to acquire nutritious diets.
- *Utilization*: food is consumed with a basic knowledge on nutrition, and adequate use of non-food inputs such as health care, sanitation and water.

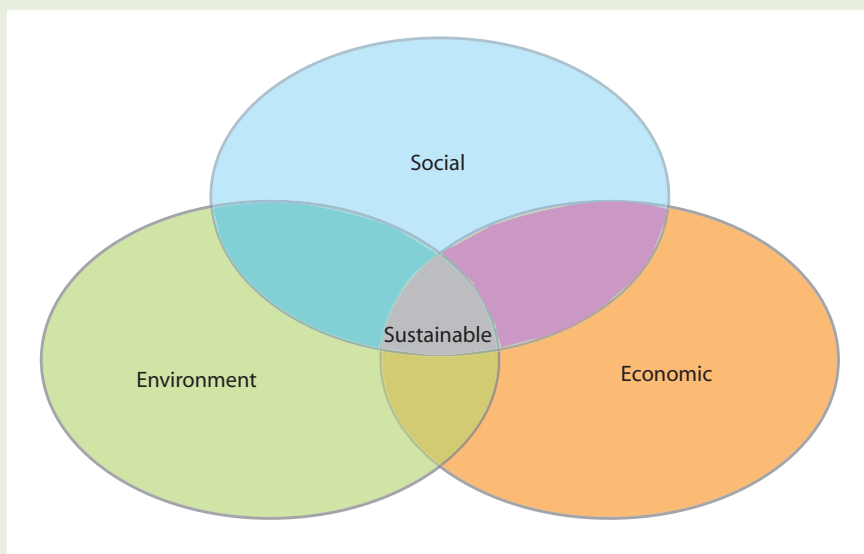
- *Stability*: food availability and access at all times.²⁷

The achievement of global food security is the overall goal of the International Treaty.

2.3.9. Sustainability, Sustainable Development and Sustainable Use of PGRFA

‘Sustainability’ is achieved when current needs are met without compromising future needs. The concept has been implicitly defined by the United Nations, affirming that “sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.²⁸ The realization of sustainable development requires an integrated approach to the three interdependent and mutually reinforcing dimensions of environmental protection and economic and social development. They came to be generally known as the three pillars of sustainability.²⁹

Figure 2.3: The Three Pillars of Sustainable Development



²⁶ FAO (2009), p. 1, footnote 1.

²⁷ FAO (2006), p. 1.

²⁸ Brundtland Commission of the United Nations (1987), chapter 2.

²⁹ United Nations General Assembly (2005), para. 48.





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The ‘sustainable use of PGRFA’ is one of the main objectives of the International Treaty. However, it does not define the concept of sustainable use *per se*. For the purposes of the CBD, sustainable use has been defined as the “use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations”.³⁰

It can thus be safely deduced that using PGRFA in a sustainable way implies making

use of crop diversity to meet the food security needs of present generations without compromising the availability of PGRFA as the base of food security for future generations.

However, what makes PGRFA truly unique with regard to most other components of biodiversity is that they need to be continuously used in order to be conserved for the future. The International Treaty therefore proposes a whole set of measures to promote the sustainable use of PGRFA, including, among others, the pursuit of agricultural policies in favour of diverse

Key points to remember:

- Sustainability is achieved when current needs are met without compromising future needs.
- The three pillars of sustainable development are constituted by the three interdependent and mutually reinforcing dimensions of environmental protection and economic and social development.
- PGRFA need to be continuously used in order to be conserved for the future.
- The International Treaty proposes a comprehensive set of measures to Contracting Parties for the promotion of the sustainable use of PGRFA.



³⁰ Convention on Biological Diversity (1992), Article 2.



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farming systems, the promotion of plant breeding efforts and on-farm management of crop diversity.³¹

2.3.10. State Sovereignty and Sovereign Rights over Genetic Resources

‘Sovereignty’ means having supreme authority within a territory. The current notion of state sovereignty goes back to the Treaty of Westphalia (1648); it includes the principles of territorial integrity, border inviolability, and supremacy of the state.³²

‘Sovereign rights’ over natural resources are the rights of independent sovereign states to

legislate, manage, exploit and control access to the natural resources within their borders. They are grounded in the Charter of the United Nations and the principles of international law. The CBD was the first legally binding international agreement to specifically recognize the sovereign rights of states over their own natural resources. The CBD notably affirms the principle that the authority to determine access to genetic resources rests with the national government concerned.³³

Under the International Treaty, countries grant each other facilitated access to their genetic material of a number of the most important crops for food security in the exercise of the sovereign rights that they hold over their genetic resources.

Key points to remember:

- Countries have sovereign rights to legislate, manage, exploit and control access to their natural resources, including PGRFA.
- In the exercise of these sovereign rights, under the International Treaty countries grant each other facilitated access to a number of their most important crops for food security.

³¹ For a more detailed description of the measures to promote sustainable use of PGRFA as proposed by the International Treaty please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

³² Stanford Encyclopedia of Philosophy (2010).

³³ Leskien and Flitner (1997), p. 36.





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2.3.11. Access and Benefit-sharing

‘Access and Benefit-sharing’ (ABS) is a concept to regulate exchanges of a given resource between certain actors. On the international level, the concept was first introduced in 1992 in the domain of genetic resources, with the adoption of the CBD.

The CBD laid down the broad principles that countries are to respect when requesting and granting each other access to their genetic resources. These include that benefits that may arise from the use of such genetic resources be shared in a fair and equitable way with the country granting access – hence the designation ‘access and benefit-sharing’. Such benefits may include non-monetary benefits such as research results, or also possible monetary benefits from the commercialization of a product

that has been developed on the basis of the accessed resource.

With its Multilateral System (see below) the International Treaty has established the first legally binding international ABS mechanism in history which regulates the exchange of a number of the most important crops for food security.

2.3.12. The Multilateral System of Access and Benefit-sharing

The Multilateral System is often simply referred to as MLS. It is the first operational legally binding ABS mechanism on the international level. The Multilateral System can be thought of as a global pool of PGRFA which is shared and managed jointly by all Contracting Parties of the International Treaty.

Key points to remember:

- In the context of genetic resources, ABS is a concept that regulates exchanges of genetic material between a recipient and a provider of such material. It foresees that benefits that may arise to the recipient from the use of the exchanged genetic material be shared in a fair and equitable way with the provider of the material.

Box 2.2: The Nagoya Protocol of the CBD and its Relationship with the Multilateral System of the International Treaty

With its entry into force in 2004 the International Treaty provided the first legally binding mechanism for ABS: the Multilateral System of Access and Benefit-sharing. This Multilateral System facilitates international exchanges of 64 food crops and forages that have been selected according to the criteria of their importance for food security and on the degree of interdependence among countries regarding these crops. They are listed in Annex I of the International Treaty.³⁴ Together, these 64 food crops and forages cover over 80 percent of human nutrition of plant origin. The Governing Body of the International Treaty has the possibility to negotiate the coverage of the Multilateral System to include an even larger range of PGRFA in the future. Furthermore, the CGIAR Centres and other institutions with PGRFA collections, exchange also PGRFA that are not listed in Annex I under the terms of the Multilateral System.

Negotiations on an agreement on ABS that would aim at regulating international exchanges of all – except human – genetic resources, including for purposes other than agriculture, have been launched in the framework of the CBD in 2005. They culminated in October 2010 in the adoption of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (hereafter “Nagoya Protocol”).

The Nagoya Protocol is foreseen to enter into force in 2012. It requires that the countries that adhere to it take legislative, administrative or policy measures to ensure that benefits arising from the utilization of genetic resources are shared upon mutually agreed terms (MAT) in a fair and equitable way with the provider country of these resources. The recipient of the material also has to ensure that the prior informed consent (PIC) of the country granting access to its genetic resources is established. Such measures are to be developed at the national level and may therefore vary from country to country. This implies that generally the terms of exchange would have to be negotiated and agreed on a case by case basis. The Nagoya Protocol provides for the creation of an internationally recognized certificate of compliance to serve as evidence that the genetic resource which it covers has been accessed in accordance with PIC and MAT.

Since the entry into force of the International Treaty, its Multilateral System has been establishing itself as an efficient ABS mechanism in the domain of PGRFA. The existence and functioning of the Multilateral System has therefore been considered in the Nagoya Protocol. In its preamble, the Nagoya Protocol recognizes the interdependence of all countries with regard to PGRFA, as well as the special nature of PGRFA and their importance for food security. In this context, it acknowledges the fundamental role of the International Treaty, recalling notably its Multilateral System.

Article 3*bis* of the Nagoya Protocol makes it clear that, where a specialized international access and benefit-sharing instrument that is consistent with and does not run counter to the objectives of the CBD and the Nagoya Protocol applies, the Nagoya Protocol will not apply for the countries that are parties to the specialized instrument “in respect of the specific genetic resource covered by and for the purpose of the specialized instrument.”³⁵ In the context of PGRFA, concretely, this means that genetic material of the food crops and forages contained in Annex I of the International Treaty fall under the facilitated terms of exchange of the Multilateral System.

³⁴ For an overview of the crops contained in Annex I of the International Treaty see: http://www.planttreaty.org/training/annex1_en.htm.

For more details about the relationship between the International Treaty and the CBD please refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

³⁵ Nagoya Protocol (2010), Preamble, Arts. 3*bis*, 4, 5 and 13.



Key points to remember:

- The Multilateral System of the International Treaty is the first operational legally binding international ABS mechanism in history.
- Within the global gene pool of the Multilateral System the Contracting Parties of the International Treaty grant each other facilitated access to their collections of PGRFA of 64 of the most important crops for food security.
- Crops covered by the Multilateral System are listed in Annex I of the International Treaty.
- The SMTA is the standard contract for exchanges of PGRFA under the Multilateral System.

The crops that form part of this global gene pool are listed in Annex I of the International Treaty. Exchanges of crop genetic material that is part of the Multilateral System are facilitated by a standard contract, the so-called ‘Standard Material Transfer Agreement’ (SMTA). The SMTA regulates the terms under which material can be accessed and to what ends it can be used. It also defines how the resulting benefits of such exchanges will be shared among the Contracting Parties.³⁶

2.3.13. Contracting Parties

The member states of the International Treaty, i.e. the countries that have formally ratified, accepted, approved or acceded to

the International Treaty, are officially called ‘Contracting Parties’.

2.3.14. Governing Body

The Governing Body, often simply referred to as ‘GB’, is the supreme decision-making body of the International Treaty. It consists of the International Treaty’s Contracting Parties. The Governing Body reviews the progress and programme of work of the International Treaty on a biannual basis. It notably provides guidance to Contracting Parties and takes the necessary decisions for the gradual implementation of the International Treaty.³⁷



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³⁶ The Multilateral System is dealt with in Arts. 10-13 of the International Treaty. For more details on the Multilateral System please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

³⁷ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 19.



2.4. Conclusive Summary

The International Treaty is a legally binding international agreement that aims at countering the loss of crop diversity and enhancing the use thereof, with the ultimate goal of achieving global food security. It entered into force in 2004 and by the end of 2010 counted more than 126 Contracting Parties.

The International Treaty relates to all plants that have a value for human nutrition and agriculture. These plants and their component parts are called ‘plant genetic resources for food and agriculture’ or simply ‘PGRFA’. For a number of PGRFA that are most important to global food security, the International Treaty establishes a system that facilitates the access to these resources for agricultural research and breeding activities: the Multilateral System of Access and Benefit-sharing.

As a Contracting Party of the International Treaty, a country allows its agricultural researchers and breeders – including, among others, national gene banks and research institutions, individual breeders and farm-

ers, non-governmental organizations as well as public and private breeding companies – to benefit from the facilitated access to the PGRFA contained in the gene pool of the Multilateral System.

Furthermore, Contracting Parties and stakeholders based within their borders have the possibility to receive an equitable share of the benefits that arise from the use of the material in the Multilateral System. In addition, by participating as a Contracting Party in the decision-making process of the Governing Body of the International Treaty, a country can ensure that its interests related to PGRFA are taken into consideration by the international community.

A number of terms and concepts used repeatedly in the policy area of crop diversity do not have internationally agreed definitions. In the absence of such agreed definitions it is common practice to apply the current everyday understanding for interpretation purposes.³⁸

³⁸ Moore and Tymowski (2005), p. 33.

Furthermore, it falls within the Governing Body’s mandate to agree on additional definitions of terms related to the International Treaty, if needed.



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History of the International Treaty



LESSON 3



Learning objectives

At the end of this lesson, the learner will:

- be familiar with the socio-economic factors that led to the first policy discussions related to plant genetic resources management at the international level;
- be aware of the origins of the International Treaty and its emergence in relation to other multilateral processes; and
- have an overview of the main steps of the negotiation process that led to the adoption of the International Treaty.



Target learner groups

Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Fragaria, strawberry, by Elizabeth Blackwell (1739)

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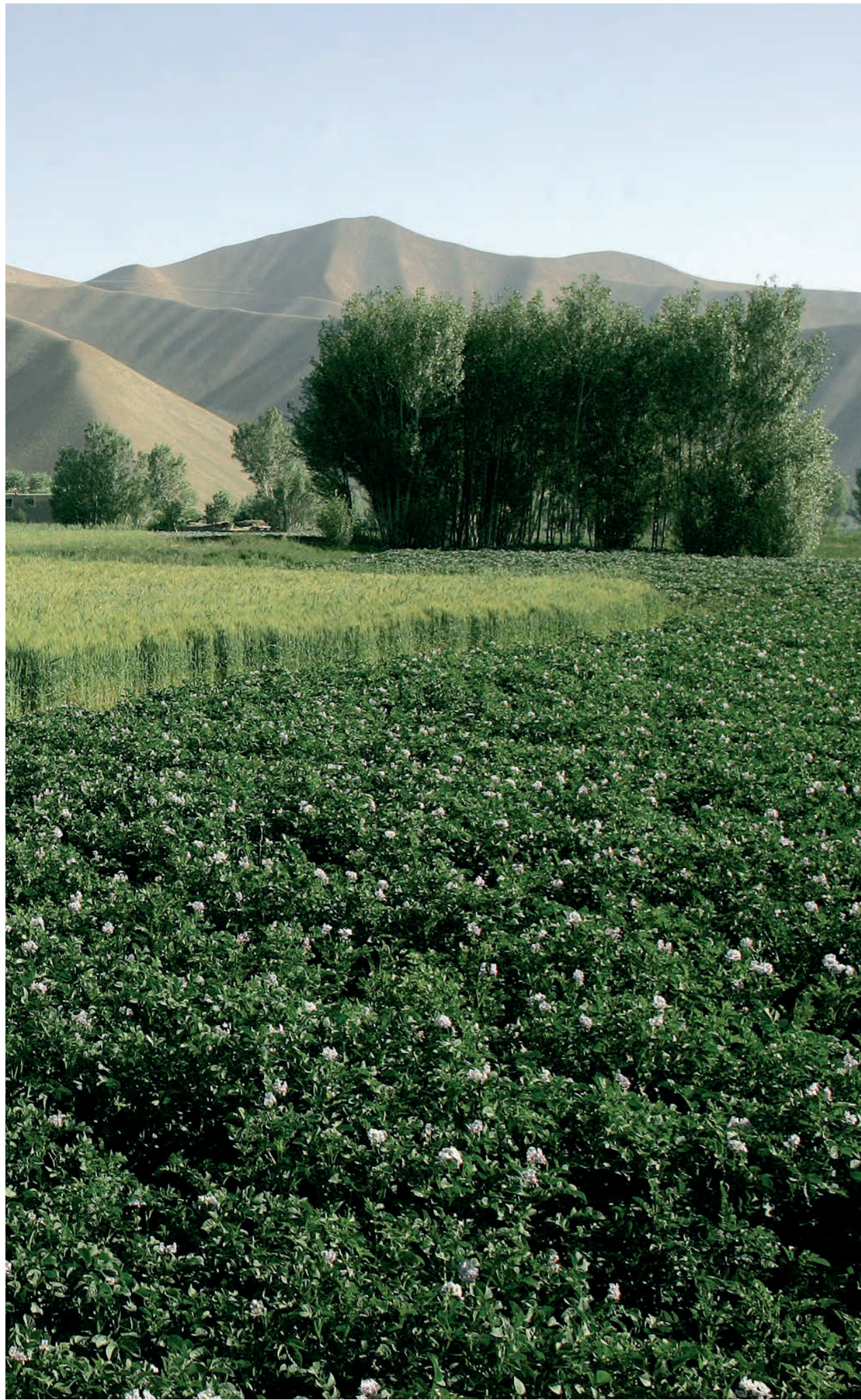
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3.1. Overview of the Lesson

This lesson looks at the sequence of events that led to the adoption of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”).

The international legal framework governing plant genetic resources for food and agriculture (PGRFA) has progressively evolved over time. The International Treaty itself has been adopted by the Conference of the Food and Agriculture Organization of the United Nations (FAO) relatively recently, in 2001, and entered into force in 2004. However, formal negotiations had started a decade earlier, in consequence of more than two decades of previous discussions in policy setting bodies dealing with food security and PGRFA.

This lesson takes the global challenges of the beginning of the second half of the 20th century as a starting point: rapid population growth and food security. In this context, agricultural research and breeding for yield improvements became more important than ever. A first international instrument to promote the conservation of

PGRFA and to facilitate their exchange for global food security was adopted in 1983: the International Undertaking on Plant Genetic Resources (hereafter “International Undertaking”).

The adoption of the Convention on Biological Diversity (CBD) in 1992 called for a revision of the International Undertaking in order to ensure the mutual harmony of the two instruments. The negotiations for this revision took place within the FAO Commission on Genetic Resources for Food and Agriculture (hereafter “Commission”).¹ This lesson provides insights about the negotiation process which culminated in the adoption of the first legally binding international instrument for food security: the International Treaty.

After completion of this lesson, the learner will understand the context in which the International Treaty emerged. It will also help him or her comprehend the respective mandates of certain key instruments and institutions that form part of the international framework governing PGRFA and how they relate to the International Treaty.²

¹ When the Commission was established its mandate was limited to PGRFA and it was named ‘Commission on Plant Genetic Resources’. In 1995, the FAO Conference broadened the Commission’s mandate to all components of biodiversity of relevance to food and agriculture, and its name was accordingly changed to ‘Commission on Genetic Resources for Food and Agriculture’.

² The mandates of some key instruments and institutions that form part of the international policy framework on PGRFA will be the focus of lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).





3.2. The Need for an International Policy Instrument in the Area of Crop Diversity and Food Security

3.2.1. Rapid Increase in World Food Demand due to Population Growth

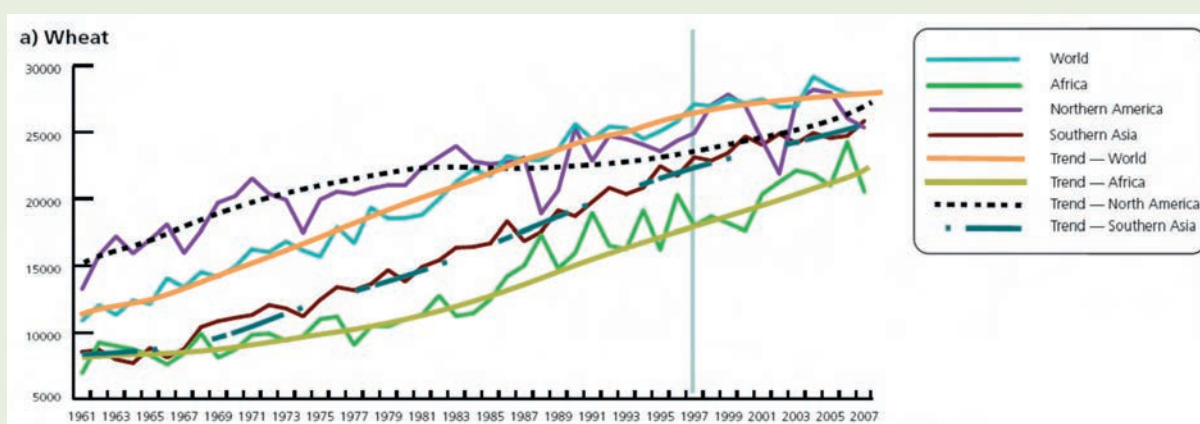
Basic Facts

In the aftermath of the Second World War, major increases in the rate of population growth were experienced around the globe.³ Main factors therefore were that industrialized countries re-established their peacetime economies, and many countries in the developing world gained their political independence. At the same time, improvements in sanitation and medicine increased life expectancy worldwide. It was in this context that terms like ‘population explosion’ and ‘overpopulation’ emerged and global concern about the issue of food security materialized.⁴

The Indian subcontinent, for example, experienced several grave famines during the 1940s when it was still under colonial rule. After gaining its independence, one of the main goals of India was to become self-sufficient in agricultural production in order to meet the food security needs of its steadily growing population and to avoid future famines. Many other countries were facing similar situations.⁵

Consequently, agricultural research focused on ways to increase global yields, especially through the development of higher yielding varieties of major crops such as maize, rice and wheat. An increasing share of official development assistance was invested in agriculture, and the first international agricultural research centres were estab-

Figure 3.1: Average Yields (kg/ha) for Wheat Over the Period 1961-2007



Source: The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.⁶

³ United Nations Secretariat (1999), part 1, p. 3.

Whereas it took world population 123 years to double from one to two billions between 1804 and 1927, it crossed the three billion mark only 33 years later in 1960.

⁴ Global Food Security (2011).

⁵ Gordon (1983), p. 1051.

Notably, during the ‘Bengal famine’ in 1943-1944 it is estimated that around three million people died from starvation and malnutrition in Eastern India alone.

⁶ FAO (2010), p. 188.



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lished.⁷ These international agricultural research centres later joined their forces under the umbrella of the Consultative Group on International Agricultural Research (CGIAR).⁸ They had a leading role in the development of improved crop varieties. New high-yielding crop varieties – together with the introduction of new irrigation techniques, fertilizers and pesticides – made possible what came to be known as

the ‘Green Revolution’. Since 1970 world cereal production has more than doubled, expanding faster than world population growth.⁹

In this context, awareness of the value of crop diversity for food security grew increasingly, and with it awareness on the need for access to plant genetic resources for agricultural research and breeding.

Key points to remember:

- Major increases in the rate of population growth worldwide in the second half of the 20th century led to global concern about the issue of food security.
- In response, countries invested an increasing share of official development assistance in agriculture, and the first international agricultural research centres were established.
- Agricultural research focused on ways to increase global yields, especially through the development of higher yielding varieties of major food crops.
- As a result, grain output has expanded by more than 250 percent in the period from 1950 to 1984, under what has been labelled the ‘Green Revolution’.
- The successes that were achieved under the Green Revolution showcase the value of crop diversity for food security and the importance of access to PGRFA for agricultural research and breeding.

⁷ FAO (2011).

Official development assistance invested in agriculture peaked in 1979 at 17 percent.

⁸ For more information on the CGIAR Centres see Box 3.1.

⁹ FAO (2004), p. 26.

According to Le Buanec, chairman of the 2nd World Seed Conference (2009), about half of this increase in yield is attributable to improved crop varieties, and the other half comes from the shift to new agricultural practices including the use of irrigation, fertilizers and pesticides. For more information related to the 2nd World Seed Conference see: <http://www.worldseedconference.org/>.



Box 3.1: The Consultative Group on International Agricultural Research (CGIAR)

The Consultative Group on International Agricultural Research (CGIAR) is a global partnership that unites organizations engaged in research for sustainable development and donors of their work. The donors include country governments, foundations, and international and regional organizations. The work they support is carried out by the 15 International Agricultural Research Centres (hereafter “CGIAR Centres”), in close collaboration with hundreds of partner organizations, including national and regional research institutes, civil society organizations, academia, and the private sector.

The CGIAR grew out of the international response to widespread concern in the 1950s, 1960s and early 1970s that many developing countries would succumb to hunger. Experts predicted widespread and devastating famine between 1970 and 1985. Such grim predictions were proved wrong by a combination of connected trends: the reorientation of domestic policies in developing countries that were considered particularly vulnerable sharply focused research by scientists in these countries, a great effort by farmers, and the impact of international research on tropical agriculture.

The origins of the CGIAR lie in the Mexico-Rockefeller Foundation International Agriculture Programme, a groundbreaking collaborative venture set up in 1943 at the suggestion of the governments of the US and Mexico, with the strong backing of the Rockefeller Foundation. A team of scientists including Norman Borlaug – who in 1970 received the Nobel Prize for his achievements – focused primarily on increasing the productivity of beans, maize, wheat and potatoes. After several years of research, the programme was able to develop semi-dwarf varieties of high-yielding wheat, with yields three times higher than those of traditional varieties, and Mexico was declared self-sufficient in wheat.

The transfer of knowledge from Mexico to India, where famine was widely anticipated, brought major productivity increases in that South Asian country and elsewhere in Asia. A new rice programme headquartered in the Philippines was inaugurated through the joint efforts of the Ford Foundation and the Rockefeller Foundation. These early efforts led to the establishment of four international agricultural centres: the International Rice Research Institute in the Philippines in 1960, the International Maize and Wheat Improvement Centre in Mexico in 1966, the International Centre for Tropical Agriculture in Colombia in 1967, and the International Institute of Tropical Agriculture in Nigeria in 1967.

However, the foundations were not able, on their own, to support international agricultural research in perpetuity. Hence, they joined forces with the heads of the Food and Agriculture Organization (FAO) of the United Nations, the United Nations Development Programme (UNDP) and the World Bank to persuade influential donors that agricultural research deserved high priority on the international development agenda. This resulted in a series of policy consultations in 1969-1971 to discuss the goals of international agricultural research, financial support for research and a suitable mechanism to harmonize these efforts.

The policy makers and experts involved in these consultations invited the World Bank to set up a consultative group for international agricultural research, similar to other groups that it had created to coordinate and support development in individual countries. The World Bank accepted the challenge and led the effort to create the CGIAR. FAO and UNDP worked with the World Bank as co-sponsors, subsequently joined by the International Fund for Agricultural Development (IFAD).



At its inaugural meeting in May 1971, the CGIAR adopted its *Statement of Objectives, Composition, and Organizational Structure*. This founding resolution committed the CGIAR to:

- examine the needs of developing countries for specialized efforts in agriculture;
- harmonize international, regional, and national efforts to finance and undertake agricultural research;
- provide finance for high-priority agricultural research; and
- undertake a continuing review of priorities.

CGIAR scientists have played a major role in collecting, characterizing and conserving plant genetic resources. Eleven CGIAR Centres together maintain over 650 000 samples of PGRFA in their collections that are accessible under the terms of the Multilateral System of the International Treaty.¹⁰

3.2.2. Awareness of Genetic Erosion in Agricultural Production Systems

Hand in hand with the achievements of the Green Revolution and the raising awareness of the value of crop diversity for food security emerged the realization of the need for action to counter the loss of genetic diversity. In fact, a decrease in the genetic diversity of agricultural crops was first detected at the beginning of the second half of the 20th century. In the 1950s plant breeders began to employ the term ‘genetic erosion’ to indicate

the gradual but serious loss of crop diversity in agricultural production systems.

Thus paradoxically genetic erosion was occurring at the same time as substantial progress was being achieved with regard to the development of improved crop varieties. Recent studies have confirmed that genetic erosion has begun with the large-scale shift from traditional methods to more mechanized and industrial forms of production relying on a smaller number of higher yielding crop varieties.¹¹



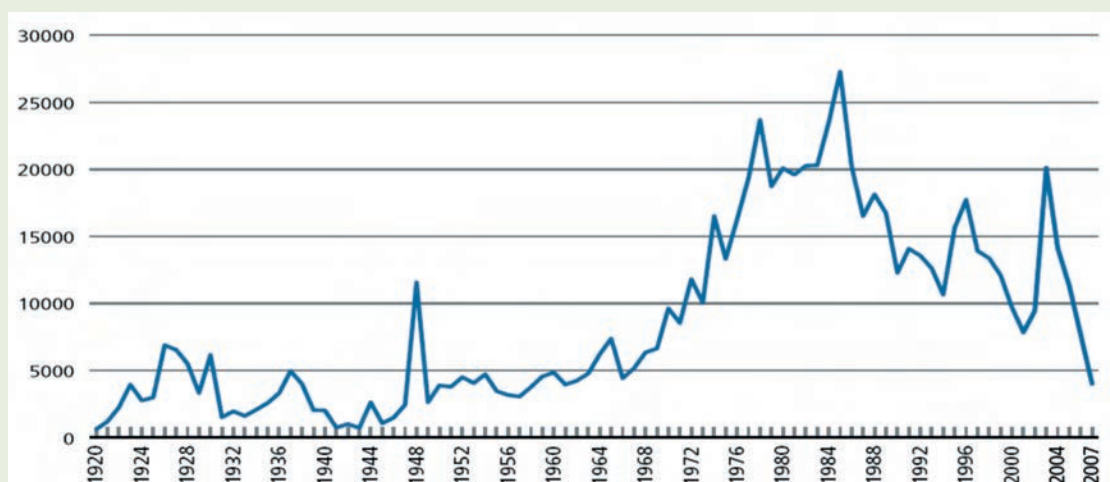
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¹⁰ CGIAR (2011).

¹¹ To learn more about the interlinkages of crop diversity, food security and climate change refer to lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change).



Figure 3.2: Number of Accessions Collected Each Year Since 1920 and Stored in Selected Gene Banks, Including Those of the CGIAR Centres



Source: The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.¹²

Plant genetic resources are the raw material for the breeding of new varieties. Agricultural researchers and plant breeders were thus among the first to realize the severity of the loss of genetic diversity in crops. In response, during the second half of the 20th century the International Agricultural Research Centres of the CGIAR (hereafter “CGIAR Centres”) established international gene banks and carried out collection missions to store as much samples as possible of the existing crop varieties to ensure their conservation for research and use in agriculture.

The gravity of the issue of loss of genetic diversity was for some time obscured by the yield increases achieved in the course of the Green Revolution. Nevertheless, awareness on the direct link between crop diversity and food security rose among political stakeholders over the following decades.¹³

Concerns about access to the remaining diversity of crop varieties for research and breeding were being increasingly voiced within FAO in the early 1980s. One of the main issues raised was the one of ownership of the samples conserved by the CGIAR Centres and other gene banks, and the right to determine their use. It was implicitly understood by the CGIAR Centres that the samples contained in their gene banks were held ‘in trust’, i.e. publicly available for the use of anyone. However, the lack of clear legal regulations on the international level created suspicions, especially from the side of developing countries where much of the material had been collected. In 1981, the FAO Conference finally agreed on the need for an international instrument regulating access to PGRFA and clarifying the legal status of *ex situ* PGRFA collections.

¹² FAO (2010), p. 157.

¹³ Coupe and Lewins (2007), p. 7.

Awareness on the link between crop diversity and food security rose not least thanks to the United Nations Conference on the Human Environment of 1972, also known as ‘Stockholm Conference’, which marked a turning point in the development of international agreements related to the environment and natural resources. To learn more about the Stockholm Conference see:

<http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97>



Key points to remember:

- A decrease in the genetic diversity of crops in agricultural production systems was first detected by plant breeders at the beginning of the second half of the 20th century; they named it ‘genetic erosion’.
- Genetic erosion began with the large-scale shift from traditional methods to more mechanized and industrial forms of agricultural production relying on a smaller number of higher yielding crop varieties.
- In response, the CGIAR Centres carried out missions to collect samples of crop varieties and conserve them in international gene banks for agricultural research and breeding.
- Awareness on the direct link between crop diversity and food security, and in this context on the value of crop diversity, rose also among political stakeholders.
- Concerns about the lack of clear international regulations on access to PGRFA were increasingly voiced within FAO.
- The International Undertaking was adopted in 1983 as the first international agreement dealing with the conservation and the sustainable use of, and notably clarifying the terms of access to, PGRFA.

The result was the adoption of the International Undertaking by the FAO Conference in 1983 – the first international agreement regulating the conservation and the sustainable use of, and notably clarifying the terms for access to, PGRFA.¹⁴ At the same time a

new intergovernmental body with the mandate to monitor and manage the operation of the International Undertaking was created: the Commission on Genetic Resources for Food and Agriculture (hereafter “Commission”).¹⁵



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¹⁴ International Undertaking on Plant Genetic Resources (1983).

¹⁵ *Idem*, Article 9.

See also comment under footnote reference 1 above.



3.3. The International Undertaking - Precursor of the International Treaty

3.3.1. The Main Contents of the International Undertaking

The International Undertaking was the first international instrument dealing with the conservation and sustainable use of agricultural crops and their wild relatives. It was a voluntary – thus not legally binding – agreement by which countries agreed that they would seek “to ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes”.¹⁶

The International Undertaking was based on the then universally accepted principle that plant genetic resources were “a heritage of mankind and consequently should be available without restriction”. In line with that principle, adhering governments and institutions holding plant genetic resources under their control were expected to adopt policies that would allow “access to samples of such resources and to permit their export where the resources have been requested for the purposes of scientific research, plant breeding or genetic resource conservation”. They also agreed that samples should be “made available free of charge, on the basis of mutual exchange or mutually agreed terms”.¹⁷



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¹⁶ International Undertaking on Plant Genetic Resources (1983), Article 1.

¹⁷ *Idem*, Arts. 1+5.

Box 3.2: Crop Diversity and the Principle of Common Heritage of Mankind

Since the beginning of agriculture some 10 000 years ago cultivated plants have been selected and exchanged between peoples and communities within and between all regions of the world. When migrating from one area to another, settlers took their seeds with them to be able to cultivate once they arrived at their new destination. Explorers brought crops they had encountered in newly discovered lands back to their home countries. This continuous exchange and selection of cultivated plants over the millennia has led to an immense legacy of crop varieties, all adapted to the specific conditions of their environments. At the same time a vast proportion of this legacy is derived from a remarkably small number of original species, the dissemination of which has entailed an increasing degree of interdependence on crop genetic material among countries.¹⁸

Against the background of this interdependence, agricultural crops came to be generally perceived as a common heritage of mankind.¹⁹ 'Common heritage of mankind' is a principle of international law which holds that defined territorial areas and elements of humanity's common cultural and natural heritage should be held in trust for future generations. Therefore they should be managed as an international public good and protected from exploitation by individual countries or corporations.²⁰

The principle that PGRFA are a heritage of mankind formed the basis of the International Undertaking. However, there has been some debate on the exact meaning of heritage of mankind and the implications of the application of the principle in the context of PGRFA. Notably, the final text of the International Undertaking does not refer to *common* heritage of mankind, but simply to heritage of mankind. This created scope for diverging interpretations on whether the principle of common heritage of mankind fully applies, and especially on whether PGRFA were to be managed as public goods. However, initial controversies were increasingly settled by means of a set of annexes that have been added to the International Undertaking, and finally by the adoption of the International Treaty.

In addition to the conservation of PGRFA in *ex situ* collections, the International Undertaking also provided for the adoption and maintenance of appropriate legislative and other measures to protect and preserve PGRFA *in situ*, that is to say in areas of their natural habitat. Furthermore, it provided for international cooperation in support of these efforts and envisaged the development of an internationally coordinated network of national, regional and international centres aimed at the establishment of a global system governing PGRFA.²¹

This global system would include the collections of PGRFA held in the gene banks of those centres that form part of the network. In order to ensure that these plant genetic resources are put to the benefit of the international community and accessible based on unrestricted availability, the collections would be placed under the auspices of FAO. The Commission would be in charge of overseeing the operation of this global system.²²

¹⁸ To learn more about countries' interdependence on agricultural crops refer to lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change).

¹⁹ Coupe and Lewins (2007), pp. 3+14.

²⁰ Shackelford (2008).

However, note that no commonly agreed definition of the principle of common heritage of mankind exists.

²¹ International Undertaking on Plant Genetic Resources (1983), Arts. 4, 6+7.

²² *Idem*, Arts. 7+9.



Key points to remember:

- The International Undertaking put forward the principle that PGRFA should be available without restriction for plant breeding and scientific purposes.
- In order to clarify the legal status of the *ex situ* collections of the CGIAR Centres and other gene banks, the International Undertaking provided a legal basis to place such collections under the auspices of FAO for the benefit of the international community, by making them accessible on the basis of unrestricted availability.

The rationale for the creation of an international network of gene banks was notably to clarify the legal status of the *ex situ* collections of the CGIAR Centres and other gene banks. The International Undertaking provided the legal basis for the CGIAR Centres and other gene banks to enter into formal agreements with FAO to place the PGRFA they held in their collections officially under the auspices of FAO.²³

3.3.2. Further Development of the International Undertaking

While the International Undertaking attracted wide support, a number of countries expressed some difficulties that preven-

ted them from adhering to it, or that entailed that they were only able to adhere to it subject to certain reservations. The concerns expressed at the time can be summarized along the following lines:

- Some countries argued that the concept of free availability of PGRFA might be in conflict with certain other international commitments they had entered into, namely the International Convention for the Protection of New Varieties of Plants (hereafter “UPOV Convention”) and the plant breeders’ rights this convention provided for.²⁴
- Some countries expressed the feeling that the global system on PGRFA envisaged by the International Undertaking was somewhat unbalanced. Their argument was that it failed to recognize the important contributions of farmers to the development of PGRFA, while it may allow rewarding the contributions of modern plant breeders through systems of plant variety protection and patents.
- Many countries also argued that any system of PGRFA should more fully reflect the sovereign rights that countries have over their genetic resources.²⁵

In order to overcome these concerns, the FAO Conference, in 1989 and 1991, adopted a series of three annexes to the International Undertaking.

²³ See below (Negotiation of the International Treaty and Entry into Force).

²⁴ Plant breeders’ rights are a form of intellectual property rights granted to breeders of a new plant variety that give them exclusive control over the propagating material and harvested material of that variety for a number of years. To learn more about intellectual property rights in the context of PGRFA and the International Treaty refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

²⁵ The sovereign rights of states over their genetic resources are grounded in the Charter of the United Nations and the principles of international law. To learn more about state sovereignty over PGRFA refer to lesson 2 (Objectives, Scope and Basic Concepts).





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The Annexes to the International Undertaking

The first annex of 1989 – Resolution 4/89 – was the so-called ‘Agreed Interpretation of the International Undertaking’.²⁶ It provided that plant breeders’ rights were, in fact, not incompatible with the International Undertaking, insofar as protected plant varieties would still be available for plant breeding and scientific purposes.

Furthermore, the Agreed Interpretations introduced the concept of Farmers’ Rights by recognizing the enormous contribution of farmers to the conservation and development of PGRFA.

The second annex – Resolution 5/89 – was specifically dedicated to Farmers’ Rights. It endorsed the concept of Farmers’ Rights with the aim to raise awareness about the need to assist farmers in the conservation of the

diversity of crops in their fields and to allow them to participate in the benefits derived from the use of PGRFA. The rationale for these rights grounded in the fact that throughout the history of humanity the majority of PGRFA have been conserved, improved and made available by countless generations of farmers, especially from developing countries.²⁷

In 1991 a third annex – Resolution 3/91 – was adopted by the FAO Conference. It clarified that the principle of heritage of mankind was not in contradiction with the concept of state sovereignty over PGRFA. The annex reaffirms the sovereign rights of states over their PGRFA by recognizing that the concept of heritage of mankind, as applied in the International Undertaking, is subject to state sovereignty. In plain language, this means that countries do not renounce their sovereignty by granting each other unrestricted

²⁶ In practice all three annexes are often jointly referred to as the ‘Agreed Interpretations of the International Undertaking’.

²⁷ The resolution provides that 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, as well as the attainment of the overall purposes of the International Undertaking. To learn more about Farmers’ Rights in the context of the International Treaty please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).





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ed availability to their PGRFA, since they would do so with their explicit agreement.

Thus, the three annexes responded to the concerns certain countries had raised with regards to the International Undertaking. However, negotiations related to access

to genetic resources in general – including PGRFA – and the fair and equitable sharing of benefits arising from their use, soon began to take place in the context of a new international policy instrument: the Convention on Biological Diversity (CBD).²⁸

Key points to remember:

Three annexes to the International Undertaking have been adopted by the FAO Conference in order to clarify some concerns raised by a number of countries:

- Resolution 4/89 provided that plant breeders' rights, such as those under the UPOV system, were compatible with the International Undertaking and recognized the enormous contribution of farmers to the conservation and development of PGRFA.
- Resolution 5/89 endorsed the concept of Farmers' Rights, highlighting the need to assist farmers in the conservation of the diversity of crops in their fields, and to allow them to participate in the benefits that are derived from the use of PGRFA.
- Resolution 3/91 clarified that the principle that PGRFA should be available without restriction for plant breeding and scientific purposes was not in contradiction with the sovereign rights of states over their PGRFA.



²⁸ The entire section 3.3. (The International Undertaking – Precursor of the International Treaty) is adapted from Moore and Tymowski (2005), pp. 6-10.

3.4. The Rio Earth Summit and the Convention on Biological Diversity

The year 1992 saw the organization of a major United Nations Conference held in Rio de Janeiro, Brazil: the United Nations Conference on Environment and Development, better known as the ‘Rio Earth Summit’. The CBD was one of the main outcomes of the Rio Earth Summit, along with the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention to Combat Desertification (UNCCD) and the Agenda 21.

3.4.1. Objectives and main Contents of the CBD

The text of the CBD was internationally negotiated within the framework of the United Nations Environment Programme (UNEP) at the so-called ‘Nairobi Conference’ earlier in the same year. The CBD was adopted and

opened for signature at the Rio Earth Summit, and entered into force in 1993. It provides a comprehensive legally binding framework whose objectives are the conservation of biological diversity, the sustainable use of its components and the sharing of benefits arising from the use of genetic resources.²⁹ Hence, the scope of the CBD also covers PGRFA.

The CBD formally recognized the sovereignty of states over their natural resources and laid down the principle that the authority to determine access to genetic resources rests with the national government concerned and is subject to its national legislation. However, member states agreed to create conditions to facilitate access to genetic resources for environmentally sound uses and not to impose restrictions that run counter to the objectives of the CBD.³⁰



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²⁹ Convention on Biological Diversity (1992), Article 1.

³⁰ With the CBD the sovereign rights of states over their genetic resources – which grounded in the Charter of the United Nations and the principles of international law – were for the first time formally recognized in an international agreement.



Access to genetic material, where granted, is to be on terms that are mutually agreed-upon between the holders of the material in question and the party that is seeking access. Unless otherwise determined by the party holding the material, access is also subject to its informed consent prior to the acquisition of the material. Measures taken with the aim of sharing benefits between the provider and the user of genetic material, including, *inter alia*, sharing of non-monetary benefits such as research results, as well as monetary benefits from commercialization, are similarly to be on mutually agreed-upon terms.

These criteria for access and benefit-sharing under the CBD are generally known as ‘prior informed consent’ (PIC) and ‘mutually agreed terms’ (MAT). Yet the CBD does not prescribe how exactly compliance with PIC and MAT is to be determined by its member states when exchanging genetic resources. In the absence of any agreed prescription,

the natural tendency for parties wishing to exchange genetic resources has been to adopt a bilateral approach to negotiating access and benefit-sharing.

The bilateral approach does often involve bureaucratic procedures that differ from country to country. Moreover, it exhibits high transaction costs as the terms of access and benefit-sharing need to be negotiated on a case by case basis. However useful a bilateral approach might be in the context of certain types of genetic resources, it has its limitations when the goal is to enhance agricultural research and breeding for the achievement of global food security. This is why during the negotiations of the International Treaty countries have opted for a multilateral solution for access and benefit-sharing that would fulfil the CBD’s conditions of PIC and MAT without the need for case by case negotiations (see further below).³¹



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³¹ After five years of negotiations a comprehensive international agreement on access and benefit-sharing was finally adopted within the framework of the CBD in October 2010 in Nagoya, Japan. In its preamble the Nagoya Protocol acknowledges the fundamental role of the International Treaty and its Multilateral System in the context of PGRFA. In fact, the Nagoya Protocol states that where a specialized international access and benefit-sharing instrument – such as the Multilateral System of the International Treaty – applies, the Nagoya Protocol does not apply for the countries that are members of “the specialized instrument in respect of the specific genetic resource covered by and for the purpose of the specialized instrument.”



Key points to remember:

- The CBD was adopted at the Rio Earth Summit in 1992 and entered into force in 1993.
- The objectives of the CBD are the conservation of biological diversity, the sustainable use of its components, and the sharing of benefits arising out of the use of genetic resources.
- The CBD formally recognized the sovereignty of states over their natural resources and laid down the principle that access to genetic resources is subject to national legislation.
- Thereby, the CBD favours a bilateral approach to exchanges of genetic resources which requires negotiations on the terms of access and benefit-sharing on a case by case basis.

3.4.2. Some Outstanding Matters

For the purpose of access and benefit-sharing, the CBD covers only genetic resources provided by member states that are countries of origin of such resources or that have acquired them in accordance with the CBD. It thus specifically does not cover access to *ex situ* material collected before the entry into force of the CBD. As we have seen above, however, many of the gene bank collections of the CGIAR Centres, as well as national collections, were established before the entry into force of the CBD.³²

The Nairobi Conference, where the text of the CBD was agreed, recognized the need to seek solutions to this and other matters related to the International Undertak-

ing that had not been explicitly dealt with by the CBD.³³ In particular, it called for solutions to be found to the question of access to *ex situ* collections acquired prior to the entry into force of the CBD, and to the question of Farmers' Rights.³⁴ FAO was called upon to strengthen the global system governing PGRFA by bringing the International Undertaking into mutual harmony with the provisions of the CBD, and further elaborating on the recognition of Farmers' Rights. This invitation was taken up by the FAO Conference in 1993, which requested the Director-General of FAO to provide a forum for negotiations for the revision of the International Undertaking.³⁵ These were carried out in the Commission that had been set up ten years earlier in order to oversee the International Undertaking.³⁶

Key points to remember:

- The CBD does not cover access to *ex situ* material collected by the CGIAR Centres and other gene banks before the entry into force of the CBD.
- The Nairobi Conference, where the text of the CBD was agreed, called upon FAO to find solutions to the issue of *ex situ* material not covered by the CBD, to further elaborate on the recognition of Farmers' Rights, and to bring the International Undertaking into harmony with the CBD.
- In 1993, the FAO Conference requested the Director-General of FAO to provide for a negotiation forum for the revision of the International Undertaking.

³² To learn more about the CGIAR Centres' relationship with the International Treaty refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

³³ Secretariat of the Convention on Biological Diversity (2005), pp. 399-408.

³⁴ *Idem*, pp. 406-408.

³⁵ FAO (1993).

³⁶ The entire section 3.4 (The Rio Earth Summit and the Convention on Biological Diversity) is adapted from Moore and Tymowski (2005), pp. 9-14.



3.5. Negotiations of the International Treaty and Entry into Force

The International Treaty was the outcome of the negotiations for the revision of the International Undertaking. In 1993, the Commission established a tentative timetable with the ambitious goal to conclude the negotiations by 1995. However, it would take seven years of intense negotiations in order for the process to culminate in the adoption of the International Treaty.

The result was a legally binding instrument for global food security that carefully bal-

ances the specific needs and priorities of a whole range of stakeholders including governments, agricultural research institutions, gene banks, farmers and breeders. It brings together the interests of industrialized countries that generally emphasize the importance of facilitated access to PGRFA for agricultural research and breeding, and developing countries that are often rich in crop diversity and generally stress the need for fair and equitable benefit-sharing.

Box 3.3: Two Major Processes Launched by the Commission – the State of the World Report and the Global Plan of Action

The Commission was established in 1983 to deal with issues related to PGRFA. Its original mandate was in particular to manage the implementation of the International Undertaking. With the aim of obtaining a proper picture as to how much genetic erosion had already taken place globally, and to develop effective strategies to confront that loss of crop diversity in order to sustain global food security, in 1993 the Commission launched two major processes: the Report on the State of the World's Plant Genetic Resources for Food and Agriculture (hereafter "State of the World Report") and the negotiation of the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (hereafter "Global Plan of Action"). In 1996 the Fourth International Technical Conference on Plant Genetic Resources, held in Leipzig, Germany, adopted the Global Plan of Action and welcomed the State of the World Report as the first comprehensive worldwide assessment of PGRFA.

The development of the Global Plan of Action and the State of the World Report were closely linked. The Commission called for the preparation of a Global Plan of Action that would identify the technical and financial needs for ensuring conservation and promoting sustainable use of PGRFA. As a result, a process was launched whereby more than 150 countries submitted national reports on the state of their PGRFA. These reports formed the basis for the elaboration of the State of the World Report.

This first State of the World Report identified a number of serious gaps and inefficiencies in the conservation and utilization of PGRFA. It showed that crop diversity was being lost both in the fields and in gene banks and that the linkages between conservation of PGRFA and their development and use by plant breeders and farmers were weak. The report further highlighted that the benefits of one of the world's most basic and valuable resources were neither realized to their full potential nor shared in a fair and equitable manner.



The Global Plan of Action contains a set of recommendations and activities which grows logically out of the State of the World Report. It is notably aimed at filling gaps, overcoming constraints and facing emergency situations identified in the State of the World Report. The Global Plan of Action would permit the Commission to recommend priorities and promote the rationalization and coordination of efforts for the conservation and sustainable use of PGRFA at the community, national, regional and international levels. More than 160 countries have adopted the Global Plan of Action in Leipzig and despite its voluntary nature many of them have, in fact, designed their own national programmes according to its priorities. In this sense, the Global Plan of Action has created an international common ground for coordinated action regarding the conservation and sustainable use of PGRFA.³⁷

The five main objectives of the Global Plan of Action are:

1. Conservation of PGRFA as the basis of food security;
2. Promotion of sustainable use of PGRFA to foster development and reduce hunger and poverty;
3. Promotion of fair and equitable sharing of the benefits arising from the use of PGRFA;
4. Assisting countries and institutions to identify priorities for action; and
5. Strengthening of existing programmes and enhancement of institutional capacities.

To reach these objectives the Global Plan of Action lists twenty priority activity areas which are grouped into the four following main sections:

1. *In situ* conservation and development;
2. *Ex situ* conservation;
3. Use of PGRFA; and
4. Institution and capacity building.

The Global Plan of Action is a dynamic instrument for the international coordination of action that is constantly adapted to evolving needs and priorities. The Global Plan of Action is recognized as a supporting component of the International Treaty. The Contracting Parties of the International Treaty notably agree to promote the effective implementation of the Global Plan of Action for their efforts related to the conservation and sustainable use of PGRFA.³⁸ The International Treaty thereby provides its Contracting Parties with the legal basis for implementing the Global Plan of Action. In fact, the Governing Body of the International Treaty often builds its own efforts upon the widely accepted framework of the Global Plan of Action. For example, the priorities for spending resources under the direct control of the Governing Body are derived from the priority activity areas of the Global Plan of Action.³⁹

The Second State of the World Report, assessing trends with regard to global PGRFA since the first edition in 1996, has been released in October 2010. It demonstrates that considerable progress has been achieved over the last decade with regard to the conservation of samples of crop varieties in gene banks. The state of crop diversity in farmers' fields and in natural surroundings, however, remains a cause for concern for a large number of crops in most countries. Many wild relatives of important food crops are likely to disappear over the next decades due to climate change.⁴⁰ In order to accurately reflect such new trends the Global Plan of Action, too, is currently under the process of being updated.

³⁷ For an overview of the coordinated action visit the Global Monitoring System of the Global Plan of Action at: <http://www.pgrfa.org/gpa/selectcountry.aspx>.

³⁸ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 14.

³⁹ For more information about the Funding Strategy of the International Treaty please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

⁴⁰ FAO (2010), chapter 1, pp. 3-22.





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In parallel to the beginning of the revision of the International Undertaking, twelve CGIAR Centres signed agreements with FAO in 1994 in order to place most of their collections under the auspices of FAO. By doing that, the CGIAR Centres formally agreed to hold the materials contained in their collections “in trust for the benefit of the international community”. This was consistent with the idea of an internationally coordinated network of gene bank collec-

tions that had been expressed in the International Undertaking. It notably provided a legal interim solution to the issue of *ex situ* collections not addressed by the CBD, until the revision of the International Undertaking would be completed.⁴¹

3.5.1. Main Steps of the Negotiation Process

The Extraordinary Sessions of the Commission of 1994-1998

Negotiations started in 1994 at the First Extraordinary Session of the Commission. As the aim was to strengthen the global system governing PGRFA, the possibility that the outcome might be a legally binding agreement existed from the outset. This fact both gave the negotiations more importance and rendered them more political.

The first attempt was to remodel the International Undertaking by integrating the three annexes into its main text and then discussing it article by article. However, it soon became clear that it was necessary to

Key points to remember:

- The International Treaty was the outcome of the negotiations for the revision of the International Undertaking.
- In parallel to the beginning of the negotiations in 1994, twelve CGIAR Centres signed agreements with FAO in order to place most of their *ex situ* collections under the auspices of FAO, thereby providing a legal interim solution to the issue of *ex situ* collections not addressed by the CBD, until the revision of the International Undertaking would be completed.

⁴¹ FAO (1994), Annex, p. 5.



focus the discussions on the core elements: the scope of the instrument, the terms for access to PGRFA, and Farmers' Rights. These topics remained the focus during the five Extraordinary Sessions the Commission held between 1996 and 1998.

The idea that the new instrument should relate to all PGRFA soon reached a broad consensus. There was more discordance, however, among countries' negotiating positions regarding the following questions: how exactly was access to PGRFA to be facilitated and should it be facilitated to all PGRFA or only a part thereof? How should the rights of farmers with regard to PGRFA be recognized and realized?

Whereas it seemed to be generally understood that facilitated access to PGRFA was needed to achieve and sustain long term food security, economic interests of countries played an important role in the negotiations and made the process more difficult. Some countries stressed primarily the need of a regime for facilitated access that would allow for the protection of new plant varieties through intellectual property rights in order to favour the development of new varieties and to support

their agricultural research and breeding sectors. Others stressed the importance for countries – and especially the rights of their farmers – to receive a share of the benefits derived from the use of the PGRFA they would agree to grant access to.

The Montreux Meeting and the Chairman's Elements of 1999

In 1998 it seemed that the revision of the International Undertaking had come to a deadlock and it was decided that it was premature to schedule for further Extraordinary Sessions of the Commission. Rather, the Commission now considered it opportune to take some time to reflect, in order to allow countries to analyze the various positions, undertake the necessary consultations, and identify areas for possible compromise, before continuing the negotiations.

With the aim to bring the negotiations back on track, the Chairman of the Commission convened an informal meeting of a group of experts in Montreux, Switzerland, in early 1999. The 'Chairman's Elements' derived from the Montreux meeting proved to be instrumental for the successful finalization of the negotiations.



By stipulating the need for a multilateral system covering an agreed list of crops selected on the basis of food security, interdependence and the collections of the CGIAR Centres, the Chairman's Elements laid down the cornerstones of the International Treaty. They foresaw that facilitated access to this system would be allowed to minimize transaction costs, but would be restricted to food and agriculture use. Any benefit-sharing, it was agreed, could include the transfer of technology, capacity building, the exchange of information and direct funding, but should primarily benefit farmers' interests in developing countries. Crucially, the Chairman's Elements called for the recognition of the contribution of farmers to the conservation and development of PGRFA and declared that the responsibility for realizing Farmers' Rights should rest with national governments and supporting national legislation."⁴²

The Intersessional Meetings of the Contact Group of 1999-2001

In 1999 the Commission decided to integrate the Chairman's Elements into the draft

negotiation text and resume the negotiations on that basis in a smaller so-called 'Contact Group' of some 40 delegations. This Contact Group met six times between 1999 and 2001. At first focusing on the Multilateral System of Access and Benefit-sharing (hereafter "Multilateral System"), the coverage of this Multilateral System, facilitated access within the Multilateral System and Farmers' Rights, the Contact Group step by step prepared all provisions of the future International Treaty.

The Open-ended Working Group on the International Undertaking of 2001

Some last remaining issues, including definitional questions and references to intellectual property rights, were discussed during long night sessions in the Open-ended Working Group on the International Undertaking that convened over the weekend prior to the Thirty-first Session of the FAO Conference. It was also within this Working Group that the name 'International Treaty on Plant Genetic Resources for Food and Agriculture' was officially introduced.



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⁴² Coupe and Lewins (2007), p. 20.



The Adoption of the International Treaty

The International Treaty was adopted on 3 November 2001 by the Thirty-first Session of the FAO Conference. It was approved under Article XIV of the FAO Constitution by a vote of 116 Members in favour with two abstentions – Article XIV requiring a two-thirds majority for the approval of international agreements.⁴³ The adoption brought to an end more than seven years of difficult negotiations that consisted in thoroughly balancing and reflecting the interests and priorities of both developing and developed countries, as well as the different stakeholders of the International Treaty.⁴⁴

The Interim Period

The International Treaty entered into force in the third year after its adoption, on 29 June

2004. In accordance with its provisions, this happened 90 days after the deposit of the fortieth instrument of ratification, acceptance, approval or accession.⁴⁵

Meanwhile, the Commission acted as the interim decision-making committee for the International Treaty (hereafter “Interim Committee”). In fact, the text of the International Treaty had foreseen a number of elements that still needed to be fully developed for its proper functioning. These included the Standard Material Transfer Agreement (SMTA) that is used for exchanges of genetic material in the International Treaty’s Multilateral System, and the Funding Strategy for the effective implementation of the activities under the International Treaty. The first negotiations on these important elements were launched under the framework of the Interim

Key points to remember:

- Formal negotiations for the revision of the International Undertaking started in 1994 at the First Extraordinary Session of the Commission.
- It was a difficult negotiation process in which the economic interests of countries played an important role. In 1998, after four years of negotiations, the process seemed to have reached a deadlock.
- The informal Montreux Meeting of experts in early 1999 and the Chairman’s Elements derived from that meeting brought the negotiations back on track.
- On the basis of the Chairman’s Elements, negotiations on the components of the International Treaty were resumed in a Contact Group of about 40 delegations between 1999 and 2001.
- Finally, after a series of night sessions over some last remaining issues, the finalized new instrument was adopted on 3 November 2001 by the Thirty-first Session of the FAO Conference.
- To highlight the legally binding character of the new instrument, its name was officially changed from ‘International Undertaking’ into ‘International Treaty on Plant Genetic Resources for Food and Agriculture’.

⁴³ Article XIV of the FAO Constitution provides an institutional framework whereby international agreements can be adopted by the FAO Conference and then opened for signature and ratification. Under the terms of Article XIV, the Conference is required to proceed to a vote on the adoption of conventions. The outcome of the vote is equivalent to an adoption by consensus, in that no Member voted against the adoption of the International Treaty.

⁴⁴ For the reports, working documents and information documents of the Extraordinary Sessions of the Commission, the Montreux Meeting, the Intersessional Meetings of the Contact Group and the Open-ended Working Group please refer to the website of the Commission at: <http://www.fao.org/nr/cgrfa/cgrfa-meetings/cgrfa-comm/en/>.

⁴⁵ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 28.



Committee, which carried out this role until 2006, when the Governing Body of the International Treaty (hereafter “Governing Body”) convened for the first time.⁴⁶

The Establishment of the Secretariat of the International Treaty

While the Commission was acting as the Interim Committee for the International Treaty, the Secretariat of the Commission was fulfilling the role of its Interim Secretariat. The International Treaty, however, foresees that it shall have its own Secretary, assisted by a number of staff. Together they would form the Secretariat of the International Treaty, with the main function to provide administrative support for the sessions of the Governing Body and to assist the Governing Body in carrying out its functions.⁴⁷ At its first session in June 2006 the Governing Body adopted the terms of reference for the Secretary of the International Treaty in

order to commence the process for his appointment, and dealt with the matters necessary for the establishment of the Secretariat. In January 2007, Dr Shakeel Bhatti was appointed by the Director-General of FAO as the first Secretary of the Governing Body of the International Treaty.

Key points to remember:

- The International Treaty entered into force on 29 June 2004.
- The Commission acted as the Interim Committee for the International Treaty until the Governing Body of the International Treaty met for the first time in June 2006.
- In January 2007, Dr Shakeel Bhatti was appointed by the Director-General of FAO as the first Secretary of the Governing Body of the International Treaty.



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⁴⁶ See lesson 4 of this module (Main Components and Governance of the International Treaty) for more information on the SMTA and the Funding Strategy.

⁴⁷ For more information on the respective roles of the Governing Body and the Secretary see lesson 4 of this module (Main Components and Governance of the International Treaty).



3.6. Conclusive Summary

Awareness of the value of crop diversity for global food security emerged in the aftermath of the Second World War when the world population began to increase dramatically. Agricultural research started to focus on the development of higher yielding crop varieties to cope with the food security challenge. Soon it was recognized, however, that the focus on improved varieties of only few major crops – albeit allowing for the urgently needed significantly higher yields – contributed to the erosion of crop diversity in agricultural production systems. The CGIAR Centres therefore established international gene banks for the conservation of the existing crop varieties for future research and use in agriculture.

Political stakeholders also began to recognize the value of crop diversity for food security and the issue started to be debated on the international level. With the aim of ensuring access to PGRFA for plant breeding and scientific purposes, a first international instrument for the conservation and the sustainable use of PGRFA for food security was adopted within FAO in 1983: the International Undertaking. The International Undertaking was a voluntary international instrument based on the principle that PGRFA are a heritage of mankind and therefore should be made freely available.

With the Rio Earth Summit in 1992 came the adoption of the CBD: a legally binding international instrument for the conservation and the sustainable use of all components of biodiversity – including also PGRFA – and the fair and equitable sharing of the benefits arising out of the use of genetic resources. The CBD formally recognized the principle

that states have sovereign rights over their natural resources. Consequently, it foresees that genetic resources can only be accessed with the prior informed consent of the country holding them and on terms that have been mutually agreed. However, the CBD did not address the legal status of *ex situ* gene bank material that was accessed before its entry into force.

The conference that adopted the CBD invited FAO to provide a forum for negotiations in order to ensure mutual harmony of the International Undertaking and the CBD. Outstanding issues to be dealt with notably included the harmonization of the concept of ‘heritage of mankind’ with the principle of sovereign rights over PGRFA, and the clarification of the status of *ex situ* collections of PGRFA not covered by the CBD.

The International Treaty was the result of the negotiations for the revision of the International Undertaking. It reaffirms the sovereign rights of countries over their PGRFA. In the exercise of their sovereign rights the Contracting Parties of the International Treaty established the Multilateral System for facilitated access and benefit-sharing for a number of those PGRFA that are most important for food security and on which countries are most interdependent for purposes of agricultural research and breeding. For these PGRFA, the terms and conditions of access have been agreed on a multilateral basis as among the Contracting Parties, thus avoiding the need to negotiate terms and conditions of access on a bilateral basis. The Multilateral System ensures that exchanges of PGRFA are in line with the requirements of prior informed consent and mutually agreed





terms of the CBD. The International Treaty also recognizes Farmers' Rights, and it provided a solution to the issue of *ex situ* material not covered by the CBD: concretely, it called upon the CGIAR Centres and other entities holding PGRFA in *ex situ* collections and that have been acquired prior to the entry into force of the CBD to enter into special agreements with the Governing Body. This gave the CGIAR Centres the legal basis to place their collections under the Multilateral System, and to exchange their material in accordance with the provisions of the International Treaty.⁴⁸

The International Treaty is the only legally binding international instrument for food se-

curity that takes into account the special nature of PGRFA and provides specific rules that are adapted to the needs of food and agriculture. Contracting Parties are bound by international law to adhere to the provisions that they have agreed to by adhering to the International Treaty. Thereby, the adoption of the International Treaty has significantly strengthened the global system governing PGRFA, providing it with an overall legal framework. By establishing a system that facilitates access to PGRFA while respecting the sovereign rights of states over their PGRFA, and that is in line with the access and benefit-sharing requirements of the CBD, the International Treaty furthermore ensures mutual harmony with the CBD.

⁴⁸ Please refer to lesson 4 of this module (Main Components and Governance of the International Treaty) for more information on the Multilateral System and Farmers' Rights.

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Main Components and Governance of the International Treaty



LESSON 4



Learning objectives

At the end of this lesson, the learner will:

- be familiar with the main components of the International Treaty;
- be able to name possible policy and legal measures to promote the objectives of the International Treaty at the national level;
- have an overview of the governance structure of the International Treaty; and
- understand the role of the National Focal Points.



Target learner groups

Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Pisum sativum, pea, by Elizabeth Blackwell (1739)

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4.1. Overview of the Lesson

Lesson 1 provides a brief overlook of the importance of the International Treaty's main components for coping with the global challenge of enhancing food security in the context of climate change. The main components are further addressed in the other lessons, where the objectives, scope and basic concepts, as well as the history of the International Treaty, are dealt with. Having studied these lessons, the learner would thus already have acquired a basic sense of the main components of the International Treaty.

Lesson 4, in turn, focuses exclusively on the main components. The agreed framework as contained in the respective provisions of the International Treaty is illustrated for each of them. Major developments since the entry into force of the International Treaty are also presented, notably in the case of the Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”) and the Funding Strategy. In addition, the lesson introduces the governance structure of the International Treaty.

The lesson does not attempt to deal with all provisions of the International Treaty. Rather, it seeks to explain the text in a simplified way. The contents of the provisions that are central to the main components of the International Treaty are therefore grouped and presented according to the following headings:

- Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture;
- Farmers' Rights;
- The Multilateral System of Access and Benefit-sharing;
- The Funding Strategy; and
- Governance of the International Treaty.

After completion of this lesson, the learner will be familiar with the mechanisms and the operation of the main components of the International Treaty, and with the bodies involved in its governance. The lesson also constitutes the basis for the forthcoming educational modules II to V of this series, each of which will be dedicated to the in-depth study of one of the main components of the International Treaty.



4.2. The Main Components of the International Treaty

The International Treaty is a comprehensive but concise instrument. It is comprehensive in the sense that the scope for the achievement of its objectives covers the totality of agricultural crops and their wild relatives and it addresses major global challenges as presented in lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change). At the same time, the text of the International Treaty is a rather short document, containing only 35 articles and two annexes.

One might be puzzled when imagining that such a concise instrument is able to provide for effective mechanisms to tackle the major global challenges of food security and climate change. However, this is possible because the International Treaty can be understood as a ‘framework convention’, in the sense that

not every detail related to its operation was entirely elaborated at the time of its adoption. Instead, Contracting Parties agreed on the basic principles on which the mechanisms were to be constructed, in the understanding that the details would be elaborated in the subsequent deliberations of the Governing Body of the International Treaty (hereafter “Governing Body”).

The Contracting Parties meet at least every two years in the Governing Body. There they take the necessary decisions for the further development of the mechanisms that render the International Treaty effective. While some issues still remain to be addressed, the Governing Body has made substantial progress since the entry into force of the International Treaty in 2004.



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4.2.1. Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture

To ensure that crop diversity is effectively conserved for present and future generations and used in a sustainable way, Articles 5 and 6 of the International Treaty propose non-exhaustive enumerations of measures to Contracting Parties. Contracting Parties commit themselves to integrate such measures into their agricultural policies and rural development programmes.¹

Conservation under the International Treaty

The heading of Article 5 indicates that there is more to conservation of PGRFA than their mere preservation. It reads “Conservation, Collection, Characterization, Evaluation and

Documentation of Plant Genetic Resources for Food and Agriculture”. In accordance with the International Treaty, effective conservation of PGRFA thus comprises all of these aspects.

In a nutshell, conservation is about finding and bringing together samples of as much of the crop diversity as possible that is out there (collection), determining what exactly it is that is out there, i.e. the identification of the crop variety, its origins, and the variation in the population (characterization), identifying the special traits of a given resource, the uses the resource might fulfil and possible threats it might be exposed to (evaluation), and compiling all that information and keeping it accessible together with the resource that is being conserved (documentation).



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¹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 7. Neither the provisions of Article 5 dealing with conservation nor those of Article 6 dealing with sustainable use of PGRFA contain specific obligations that are enforceable as such. This is because not all Contracting Parties dispose of the same resources and capacities that would allow them to fully implement the required measures to the same degree. Nevertheless, upon ratification of the International Treaty countries commit themselves to pursue its objectives within the limits of their national capacities and to ensure the conformity of their laws and policies with the provisions of the International Treaty.



More concretely, under Article 5 Contracting Parties agree to undertake the following activities:

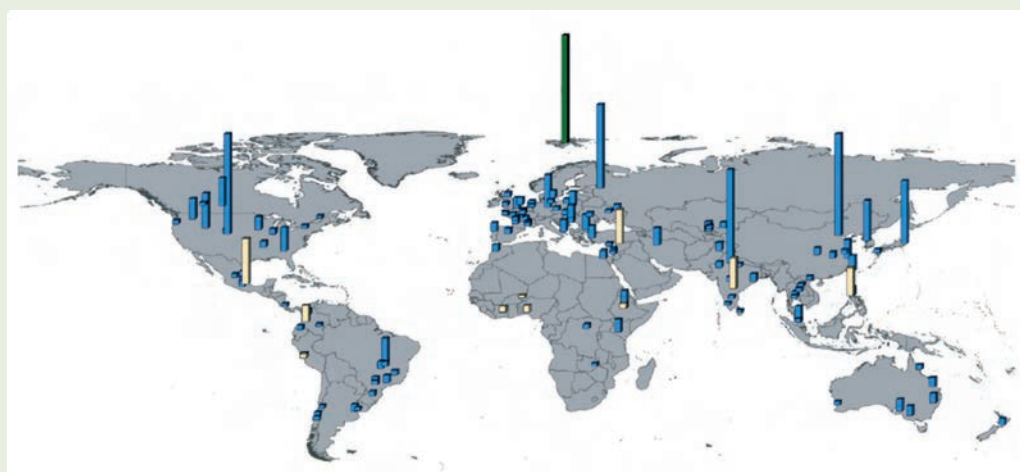
- Surveys and inventories of PGRFA;
- Collection of PGRFA and relevant associated information;
- Promotion of on-farm and *in situ* conservation of PGRFA and their wild relatives;
- Promotion of a system of *ex situ* conservation; and
- Monitoring and maintenance of collections of PGRFA.

The article highlights the importance to approach *in situ* and *ex situ* conservation in a complementary way. While emphasizing the role of farmers, indigenous and local communities for on-farm and *in situ* conservation, it equally underpins the importance of

international collaboration for the establishment of an efficient network of *ex situ* collections.²

Since the entry into force of the International Treaty, substantial progress has been achieved regarding the promotion of an effective system of *ex situ* conservation: in October 2006, the International Agricultural Research Centres of the Consultative Group on International Agricultural Research (hereafter “CGIAR Centres”) entered into agreements with the Governing Body of the International Treaty. Thereby they agreed to place their base collections of PGRFA in the Multilateral System of the International Treaty. In the meantime, many collections of national gene banks and other organizations have also been officially included in the Multilateral System, creating a network that up to date contains more than 1.3 million crop samples.³

Figure 4.1: Geographic Distribution of Gene Banks with Holdings of >10 000 Accessions (national and regional gene banks in blue; CGIAR Centres gene banks in beige; Svalbard Global Seed Vault in green)



Source: The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.⁴

² For short definitions of the terms ‘*in situ*’ and ‘*ex situ*’ please refer to lesson 2 of this module (Objectives, Scope and Basic Concepts). Different conservation techniques and the complementary role of *in situ* and *ex situ* conservation will be explained in lesson 1 of the forthcoming Module II (The Nexus of Conservation and Sustainable Use), and the content and rationale of the provisions of Article 5 will be dealt with in more detail in lesson 2 of that same module (Conservation and Sustainable Use under the International Treaty).

³ For more information on the Multilateral System see 4.2.3 further below.

⁴ FAO (2010), p. 56.



In order to ensure a complementary approach to conservation in the context of the Funding Strategy of the International Treaty (see 4.2.4 below), the Governing Body has made on-farm management and conservation of PGRFA a priority for the disbursement of financial resources under its direct control. The majority of the projects supported by the Benefit-sharing Fund of the Funding Strategy (hereafter “Benefit-sharing Fund”) therefore focus on on-farm and *in situ* conservation.

Sustainable Use under the International Treaty

Neither the concept of ‘sustainability’ nor ‘sustainable use’ are defined *per se* in the text of the International Treaty. According to what is established in lesson 2 of this module (Objectives, Scope and Basic Concepts), however, using PGRFA in a sustainable way – broadly speaking – implies making use of crop diversity to meet the food security needs of present generations without compromising its availability as the base of food security for future generations. Possible uses of PGRFA may include activities

such as agricultural research, breeding and cultivation, and in the broader sense also consumption.

Under Article 6 Contracting Parties agree on adopting measures to promote the sustainable use of PGRFA, including:

- Agricultural policies that promote diverse farming systems;
- Research that benefits crop diversity and farmers;
- Participatory plant breeding;
- Broadening the range of genetic material available to farmers;
- Promotion of locally adapted crops;
- Support of on-farm diversity; and
- Reviewing regulations concerning variety release and seed distribution.

As we can see from these measures, Article 6 has a strong focus on the importance of on-farm management of PGRFA and providing farmers with a broad genetic base of crops, as well as on involving farmers in the breeding of locally adapted crops.⁵



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⁵ Lesson 2 of the forthcoming Module II (Conservation and Sustainable Use under the International Treaty) will deal with the International Treaty’s approach to the sustainable use of PGRFA, and explain the content and the rationale of the provisions of Article 6 in a detailed manner.





The implementation of Article 6 is a standing priority item on the agenda of the Governing Body. The Governing Body considers submissions by Contracting Parties, other governments and relevant organizations and institutions with regard to their experiences and progress related to the sustainable use of PGRFA. It does so with the aim of assessing progress and identifying gaps and opportunities with regard to the sustainable use of PGRFA. The Governing Body thereby seeks to facilitate an integrated approach to the sustainable use of PGRFA among Contracting Parties.

The Link of Conservation and Sustainable Use

It is essential to note that the conservation and the sustainable use of crop diversity and its components are intrinsically linked. In the text of the International Treaty this link is provided in the chapeau of Article 5 that reads: “Each Contracting Party shall [...] promote an integrated approach to the exploration, conservation and sustainable use of plant genetic resources for food and agriculture [...]”

The practice of *in situ* on-farm conservation is illustrative to demonstrate the link of conser-

Box 4.1: An Example for the Promotion of *in situ* on-farm Conservation through Community Seed Banks: the GREEN Foundation in India

The GREEN Foundation is a community-based organization that has been working since the early 1990s with about 4200 households spread across 109 villages in Karnataka, India. It aims to preserve and promote crop diversity in this region by conserving seeds of indigenous varieties of plants. In order to do this, the foundation introduced and promoted the concept of community seed banks in conjunction with other organizations working at the grassroots level.

According to the GREEN Foundation, a seed bank is not just a store house where seed is kept for distribution or marketing or a sophisticated storage facility which is controlled for temperature and humidity. It is an important self-help strategy for maintaining genetic diversity in crop and plant species on farms. It is also a system in the process of community agriculture which includes village level facilities, a garden or field where traditional varieties are safeguarded. Through this system, farmers have played a key role in the creation, maintenance and promotion of genetic diversity. They have developed skills to meet their specific needs such as quality, resistance to pests and pathogens, adaptation to soils, water and climate etc. Local farmers have established their own seed networks to facilitate seed supply to their families and local markets.

Seeds are given free of cost to members of a seed bank. Anyone from the community can become a member by paying a nominal annual fee. The member then sows the seed, harvests the crop, and returns to the seed bank twice the quantity he received to replenish the store. The seed banks are managed by women's groups. The women have the capacity to select the seeds, store the seeds and maintain the germination to the level of improving their performance. Their work involves the process of seed mapping, which is to gather information about the varieties of seeds that have become extinct or fallen into disuse and collecting small quantities of them. The foundation then multiplies these seeds by growing them on small plots of land and setting up seed banks.

Among the various methods adopted by the foundation for this purpose, *in situ* on-farm conservation involves distribution of seed diversity among farmers, monitoring it using cards and then collecting them after the season. Seed bank registers, monitoring cards and *in situ* farmers' lists are maintained as part of the conservation activity.⁶

⁶ Box 4.1 is adapted from Centre for Education and Documentation (2009).
For more information on the Green Foundation see: <http://www.greenconserve.com/>

vation and sustainable use. Through on-farm management crops are conserved by being cultivated in farmers fields, notably in the agricultural ecosystems where they have evolved. Thereby, on-farm conservation allows crops to adapt to local conditions by being constantly exposed to them.

Ex situ conservation can be seen as a safety backup measure on the one hand, and a measure to facilitate research and breeding of new varieties on the other hand. In case a certain variety is wiped out by a natural disaster, for example, it can be reintroduced and used again if it has been stored in a safe gene bank facility. In addition, most international and national agricultural research institutions and public and private organizations maintaining collections of germplasm in *ex situ* conditions do so for activities including characterization, evaluation and documentation of the material, as well as for the breeding of improved varieties. Furthermore, germplasm cannot be stored in a gene

bank forever; it has to be renewed regularly after a certain period of time to ensure it maintains its germination capacity. This entails equally that in the meantime it needs to be cultivated, i.e. used.

In this sense, conservation and sustainable use of PGRFA are truly two sides of the same coin. As long as crop diversity continues to be used in a sustainable way, both for cultivation in the fields and for research in the labs, its use will ensure its conservation. On the other hand, active conservation efforts – especially of underutilized crop varieties – make sure that crop diversity remains available for future use.

What makes PGRFA truly unique with regard to other natural resources and most other components of biodiversity is that they are not depleted through overuse, quite on the contrary: they need to be continuously used in order to be conserved for the future.



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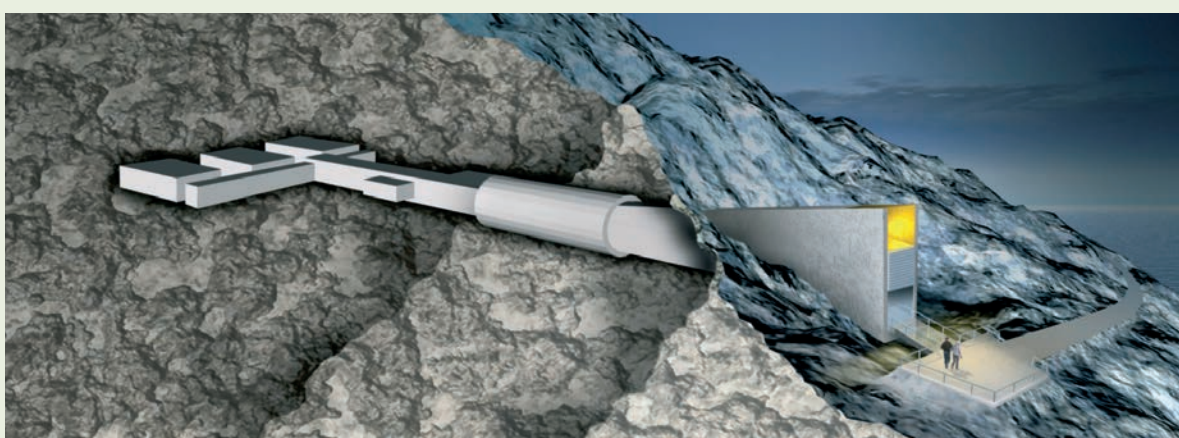


Box 4.2: The Svalbard Global Seed Vault - a Leading Initiative for long-term Safety Conservation

The Svalbard Global Seed Vault (hereafter “Seed Vault”) was officially opened on 26 February 2008, to serve as the ultimate safety net for one of the world’s most important natural resources: plant genetic resources for food and agriculture.

The world’s seed collections are vulnerable to a wide range of threats - civil strife, war, natural catastrophes, and, more routinely but no less damagingly, poor management, lack of adequate funding, and equipment failures. Unique varieties of our most important crops are lost whenever any such disaster strikes: securing duplicates of all collections in a global facility provides an insurance policy for the world’s food supply.

The Seed Vault is dug into a mountainside near the village of Longyearbyen, Svalbard. Svalbard is a group of islands nearly a thousand kilometres north of mainland Norway. For nearly four months a year the islands are enveloped in total darkness. Permafrost and thick rock ensure that, even without electricity, the samples remain frozen.



© Global Crop Diversity Trust

The Seed Vault’s construction was funded by the Norwegian government as a service to the world, and Norway also contributes an annual sum towards its operation. The Seed Vault is managed in partnership between the Global Crop Diversity Trust (hereafter “Crop Trust”), the Nordic Genetic Resource Centre (hereafter “NordGen”) and the Government of Norway.

The Seed Vault is an essential component of the Crop Trust’s activities that aim at strengthening the global system of *ex situ* conservation for the diversity of all our crops. The Crop Trust is therefore committed to supporting ongoing operational costs, and is assisting developing countries with preparing, packaging and transporting samples of unique accessions from their gene banks to the Arctic. As of May 2010 the Seed Vault held over 500 000 samples.

All seeds stored in the Seed Vault remain the property of the country or institution which sent them. There is no change of ownership; though, in any case, any seeds accepted for storage at the Seed Vault must be freely available under the terms of the International Treaty. In other words, there are no seeds stored at the Seed Vault which would not be easily accessible simply by directly contacting the gene bank which sent them.

These institutions send their seed collections to the Seed Vault in order to benefit from the safety and insurance it provides - storing seeds in the Seed Vault is entirely free to them, and voluntary. The depositing institution signs a contract with NordGen. In fact, neither the managers of the Seed Vault, Norway, the Crop Trust, nor anyone else has any right even to open the boxes in which the seeds arrive and are stored. Information about which countries have sent seeds, and the seeds which are already stored in the Seed Vault, is all public.⁷

⁷ Adapted from Global Crop Diversity Trust (2011).

Key points to remember:

- ‘Conservation’ under the International Treaty comprehends also collection, characterization, evaluation and documentation of PGRFA.
- Article 5 highlights the importance of a complementary approach to *in situ* and *ex situ* conservation.
- The international network of *ex situ* collections under the Multilateral System up to date contains more than 1.3 million crop samples. The network brings together the collections of the CGIAR Centres, national gene banks and other organizations that hold PGRFA.
- *In situ* on-farm management of PGRFA is a priority for the disbursement of funds for projects that are supported by the Benefit-sharing Fund.
- The provisions on sustainable use of PGRFA contained in Article 6 propose measures for the promotion of agricultural policies, legislations, research and breeding activities, among others.
- The provisions on sustainable use of PGRFA highlight the importance of on-farm management of PGRFA and the role of farmers.
- The implementation of Article 6 is a standing priority item on the agenda of the Governing Body to assess progress and identify gaps and opportunities with regard to the sustainable use of PGRFA.
- The conservation and the sustainable use of PGRFA are intrinsically linked: in order to be conserved for the future, PGRFA need to be continuously used.

4.2.2. Farmers’ Rights

For the first time in history the efforts and the enormous contribution of farmers – including local and indigenous communities – worldwide to the development and conservation of crop diversity has been recognized in an

international legally binding instrument, through Article 9 of the International Treaty. The International Treaty advises Contracting Parties to take measures to protect and promote Farmers’ Rights in accordance with national laws, and provides farmers a basis to advocate their rights.



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Before the adoption of the International Treaty, in the absence of an internationally agreed common ground, the concept of Farmers' Rights has come to mean different things to different people and across world regions. While some were associating it with a desire for a new form of intellectual property rights for farmer-developed materials at first, to others it was more of a political slogan seeking recognition of farmers' contributions to the conservation and sustainable use of PGRFA and support for their activities in this regard. To many it meant also to protect the ability of farmers to continue conserving PGRFA and using them in a sustainable way, and enabling farmers to take an active part in decision-making related to crop diversity.⁸

Article 9 clarifies the issue by providing the internationally agreed common ground

that was lacking prior to the adoption of the International Treaty. It notably provides the following list of measures for Contracting Parties to take at the national level for the protection and promotion of Farmers' Rights:

- The *protection of traditional knowledge* relevant to PGRFA;
- The *right to participate in the sharing of benefits* arising from the use of PGRFA; and
- The *right to participate in decision-making* related to PGRFA.

This list of measures is a non-exhaustive, indicative list. Important to note, however, is the clear statement in Article 9 that the realization of Farmers' Rights falls under the responsibility of national governments, and the adoption of the above and other measures

Box 4.3: The Linkages between Traditional Knowledge and Food Security

Millions of traditional farmers and indigenous and local communities use their traditional knowledge to ensure food and livelihood security in a wide range of ecosystems, including fragile and harsh ones. Traditional practices are related to cultural traditions and biocultural dynamics and can regenerate local food systems while increasing socio-environmental sustainability and resilience. Such practices can also be applied in innovative ways to help tackle today's problems.

Worldwide, 2.5 billion people derive their livelihoods from agricultural resources; 900 million poor people live in rural areas and 720 million – 400 million of whom are indigenous peoples – directly depend on agriculture and related activities. Traditional knowledge of food and agriculture has existed for millennia, and has evolved over the last 10 000 years with the domestication of plants and animals and the development of agriculture.

Many rural peoples have generated traditional knowledge related to the thousands of indigenous crop and plant varieties, animal breeds, landraces and wild species that they use as food, medicine and other products to ensure food and livelihood security. Today, throughout the world, 10 000 cultures and 6900 languages are involved in thousands of traditional knowledge systems. Traditional knowledge is maintained by experts and non-experts in local communities; it is held, owned and developed both collectively and individually; and it is transmitted through written, oral and non-verbal means among and within cultures, generations, population groups, communities, households and individuals.

The concept of Farmers' Rights is intrinsically linked to the traditional knowledge of farmers and indigenous and local communities. The International Treaty is the first international legally binding instrument that endorses these rights and acknowledges the enormous contribution of local and indigenous communities and farmers of all world regions to the conservation and development of PGRFA.⁹

⁸ Fowler (1997).

⁹ Adapted from FAO (2009), p. 3.



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for the promotion of Farmers' Rights remains thus at the discretion of national authorities.

In addition to these measures, the importance of the rights of farmers to save, use, exchange and sell farm-saved seed is affirmed in the preamble of the International Treaty. However, the provisions of Article 9 are neutral with respect to this so-called 'farmers' privilege'. The International Treaty acknowledges that farmers may have such rights in certain national settings, and reaffirms that where farmers do have these rights, there is no way that they could be limited by the provisions of Article 9.¹⁰

Farmers' Rights as laid down in Article 9 are backed by other provisions of the International Treaty, including the preamble and a number of the measures proposed for the promotion

of the conservation and the sustainable use of PGRFA that were summarized in the previous section. Certain provisions linked to benefit-sharing under the Multilateral System and to the Funding Strategy are also supportive of Farmers' Rights. These will be presented in the subsequent sections.¹¹

The Secretary of the International Treaty (hereafter "Secretary") compiles views on Farmers' Rights and experiences with their implementation by Contracting Parties and other relevant organizations for the consideration of the Governing Body.¹² A number of Contracting Parties have expressed uncertainty about how to best implement Farmers' Rights. To facilitate the exchange of views and experiences among stakeholders and Contracting Parties the Governing Body has decided to convene consultations on Farmers' Rights.¹³

¹⁰ Adapted from Moore and Tymowski (2005), p. 15.

¹¹ Notably Arts. 5.1c), 5.1d), 6.2b), 6.2c), and 6.2d) in the context of conservation and sustainable use; 12.3e), 13.2b)iii), 13.2d), and 13.3. in the context of the Multilateral System; and 18.5 in the context of the Funding Strategy.

¹² Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009a).

¹³ More information on the historical background of the concept of Farmers' Rights and its evolution under the International Treaty, as well as national experiences with the implementation of Farmers' Rights, will be provided in the lessons of the forthcoming Module III.



Key points to remember:

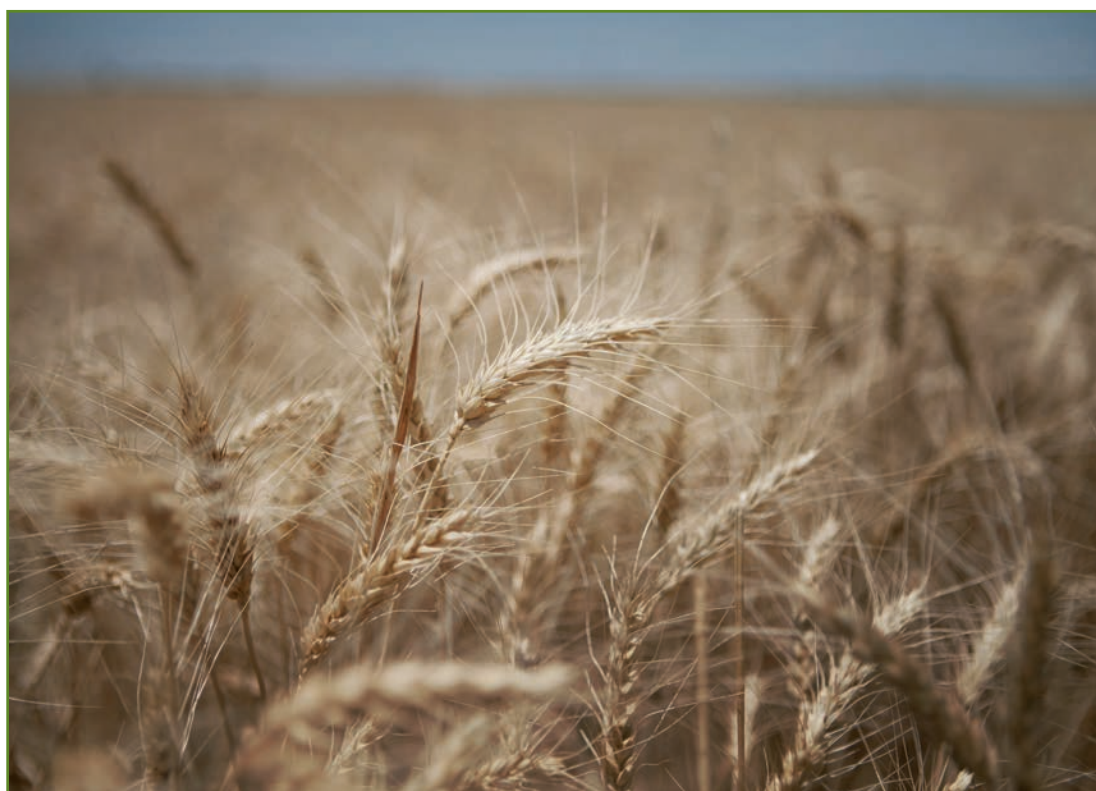
- The International Treaty is the first legally binding international instrument that recognizes the enormous contribution of local and indigenous communities and farmers worldwide to the development and conservation of crop diversity.
- Farmers' Rights under Article 9 include measures for the protection of local and indigenous communities' and farmers' traditional knowledge relevant to PGRFA, their right to share in the benefits arising from the use of PGRFA, as well as their right to participate in decision-making related to PGRFA.
- The realization of Farmers' Rights falls under the responsibility of national governments.

4.2.3. The Multilateral System of Access and Benefit-sharing

The Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”) constitutes the core mechanism of the International Treaty. It is instrumental to achieving the objectives of the International Treaty – both the conservation and the sustainable use of PGRFA, as well as the fair and equitable sharing of benefits arising from their use. The entire part IV of the International Treaty, i.e. Articles 10-13, is dedicated to the Multilateral System.

A Global Gene Pool for the Benefit of Humanity

The Contracting Parties of the International Treaty have created the Multilateral System in the framework of which they grant each other facilitated access to a number of their most important food crops and forages. The Multilateral System can be thought of as a global pool of PGRFA shared and managed jointly by all Contracting Parties of the International Treaty, and from where PGRFA can be obtained on standardized terms. A standard contract (the ‘Standard Material Transfer Agreement’, hereafter



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Box 4.4: Sovereign Rights over PGRFA

Countries have sovereign rights over their PGRFA. Sovereign rights over PGRFA are grounded in the Charter of the United Nations and the principles of international law, and formally recognized in the CBD.¹⁴ The fact that the Contracting Parties of the International Treaty grant each other facilitated access to a number of the most important crops for food security by including them in the Multilateral System does not mean that they renounce their sovereign rights over these resources. Rather, they make use of their sovereign rights to place their PGRFA in the Multilateral System for the benefit of the international community.¹⁵ Both the Multilateral System and the CBD do thus equally respect countries' sovereign rights over their PGRFA.¹⁶

“SMTA”) has been adopted by the Governing Body to regulate transfers of material that is contained in this global gene pool. The SMTA provides transparent regulations that guarantee legal security in exchanges of PGRFA. It thereby prevents misuse of the material that is exchanged and ensures that the benefits that arise from commercial use of material from the Multilateral System will be shared in a fair and equitable way among Contracting Parties.

This global gene pool, however, is not physically located in one single place in the world. On the contrary, it is a global network of international and national gene banks and other institutions that hold PGRFA – a virtual gene pool so to speak.

Coverage of the Multilateral System

Whereas the scope of the International Treaty as a whole comprehends the conservation and the sustainable use of all PGRFA, the coverage of the Multilateral System is limited to the genetic material of 64 food crops and forages. These crops are listed in Annex I of the International Treaty and are

therefore generally referred to as ‘Annex I-crops’.¹⁷

The list of Annex I-crops has been defined according to the following two criteria:

- their importance for global *food security*; and
- *interdependence*: the degree on which countries depend on genetic material of a given crop from other countries and regions for their agricultural research and breeding activities.¹⁸

Globally, the crops contained in Annex I provide for more than 80 percent of human calorie intake from plants.¹⁹ The International Treaty being a legally binding international instrument, also the Annex I list of course needed to be negotiated and agreed-upon by all Contracting Parties in a spirit of compromise. It is for this reason that some crops of importance to food security, such as soy bean and tomatoes, are not included in Annex I. It is important to note, however, that the coverage of the Multilateral System is not carved in stone; it lies within the Governing Body's capacities to re-open negotiations on the crops to be included in Annex I.

¹⁴ Convention on Biological Diversity (1992), Article 3.

¹⁵ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 10.

¹⁶ To read more about the role of the CBD in the evolution of the International Treaty see lesson 3 of this module (History of the International Treaty). For more detail about the cooperation between the International Treaty and the CBD refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

¹⁷ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Arts. 3+11.

To consult the list of Annex I-crops see: http://www.planttreaty.org/training/annex1_en.htm

¹⁸ *Idem*, Article 11.

For a more detailed explanation of the term ‘interdependence’ see lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change).

¹⁹ Grugel (2009), p. 4.





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Contracting Parties commit to include in the Multilateral System all PGRFA listed in Annex I that are under their management and control and in the public domain (e.g. material stored in national gene banks). Further, they invite other holders of PGRFA within their jurisdiction, including natural and legal persons (e.g. individuals, civil society organizations and the private sector) to include their Annex I-material in the Multilateral System. In addition to that, the Annex I-material held by the CGIAR Centres and other international institutions that enter into special agreements with the Governing Body forms also part of the Multilateral System.

The main contributors of PGRFA to the Multilateral System up to date are the CGIAR Centres, a number of other international institutions, national gene banks of Contracting Parties and also some natural and legal persons. At the time of writing this lesson the Multilateral System already contained

over 1.3 million samples of germplasm, and 600-800 samples were exchanged under the terms of the International Treaty on a daily basis.²⁰

Facilitated Access to PGRFA

Agricultural researchers and breeders – including, among others, national gene banks and research institutions, individual breeders and farmers, non-governmental organizations as well as public and private breeding companies – can all benefit from facilitated access to the plant genetic material that has been placed in the gene pool of the Multilateral System.²¹

Conditions Related to Transfers of PGRFA from the Multilateral System

The material can only be accessed for the purpose of utilization and conservation for research, breeding and training activities related to food and agriculture. The use of material to other ends, such as chemical or



²⁰ For more detailed information regarding the inclusion of PGRFA collections see: http://www.planttreaty.org/inclus_en.htm.

²¹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 12.2.



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pharmaceutical research, is not allowed.²² If any, only minimal costs, such as shipping costs, are to be charged by the provider of the material. In addition, the provider has the obligation to make associated descriptive data available together with the plant genetic material to the recipient.²³ Recipients, in turn, cannot claim any intellectual property right on the material in the form that they have received it from the Multilateral System, nor on any genetic part or component thereof. In the case that recipients conserve the material they are bound to continue to make it available to subsequent users.²⁴

Regulation of Transfers of PGRFA

The Governing Body has adopted a standard contract to regulate transfers of PGRFA, the above-mentioned SMTA. The SMTA is a pri-

vate bilateral contract under international law between a provider and a recipient of PGRFA that are part of the Multilateral System. It includes the above conditions regarding access and use of PGRFA, and defines the terms under which the monetary benefits that may arise from the commercial use of the material are to be shared within the Multilateral System. The terms for benefit-sharing under the SMTA are dealt with below.²⁵

Benefit-sharing under the Multilateral System

In its Article 13 the International Treaty foresees several options for both monetary benefit-sharing arising from the commercialization of material accessed from the Multilateral System and non-monetary forms of benefit-sharing. The Contracting

²² International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 12.3a).

²³ *Idem*, Articles 12.3b) and 12.3c).

²⁴ *Idem*, Articles 12.3d) and 12.3g).

The Governing Body has not yet decided on an agreed meaning of “in the form received”. The issue of under what conditions a plant genetic resource for food and agriculture originating from the Multilateral System can be protected by a form of intellectual property has therefore not been conclusively dealt with yet.

²⁵ Lesson 3 of the forthcoming Module IV (The Standard Material Transfer Agreement) will provide detailed information on how to use the SMTA.





Parties have agreed that such benefits should flow primarily to farmers in developing countries who promote the conservation and sustainable use of PGRFA.²⁶

*Mechanisms for non-monetary benefit-sharing include:*²⁷

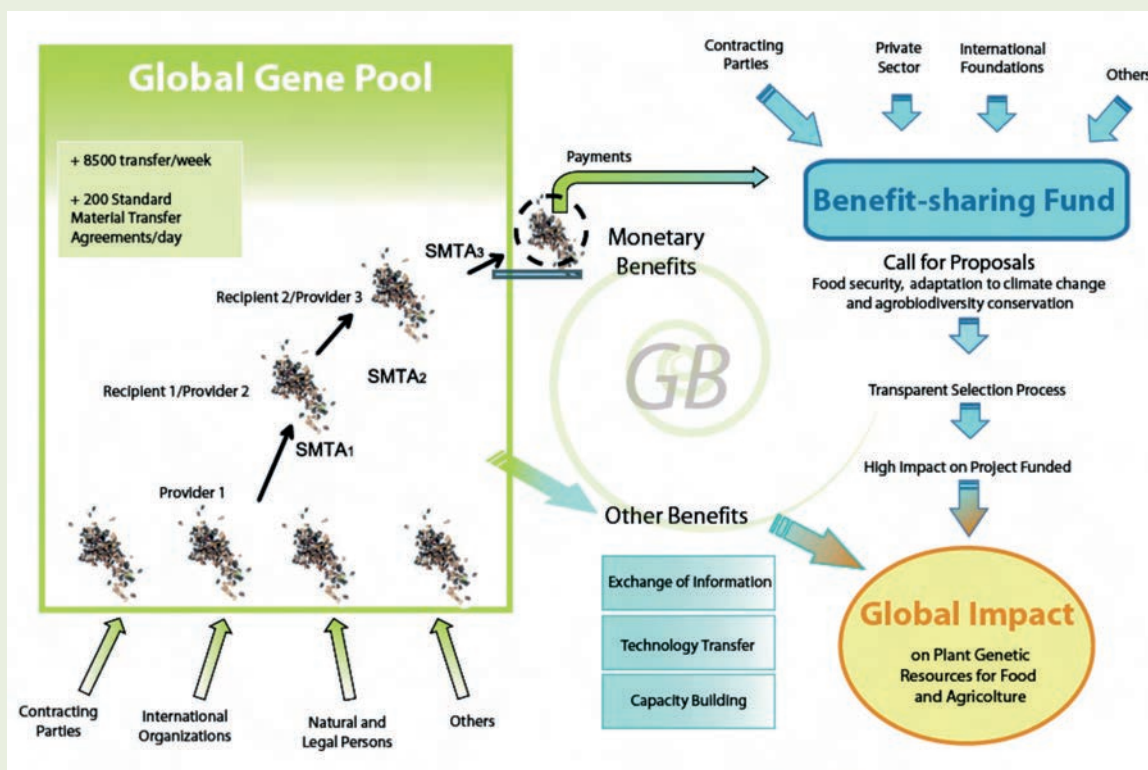
- *Exchange of information* related to PGRFA, such as inventories, information on technologies and relevant research results;
- *Access to and transfer of technology* for the conservation and sustainable use of PGRFA that are part of the Multilateral System; and
- *Capacity-building* in developing countries, primarily related to conservation and sustainable use of PGRFA, including through developing and strengthening facilities for those purposes, and carrying out scientific research.

Monetary benefit-sharing from commercialization

Anyone who commercializes a new crop variety that incorporates traits from plant genetic material originating from the Multilateral System is encouraged to pay an equitable share of commercial profits from subsequent use into the Benefit-sharing Fund. The Benefit-sharing Fund is part of the Funding Strategy which will be dealt with below.

In the case that the new variety is no longer made available to others for further research and breeding, the payment of a share of the profits into the Benefit-sharing Fund becomes mandatory. This would happen, for example, if the breeder has taken out a patent on the new material that does not allow for facilitated access according to the terms

Figure 4.2: Flow of Material and Benefits within the Multilateral System



²⁶ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 13.3.

²⁷ *Idem*, Articles 13.2a), 13.2b) and 13.2c).

of the International Treaty. The share of the profits which has to be paid into the Benefit-sharing Fund in such a case is determined in the SMTA the provider and the recipient of the original material from the Multilateral System have entered into at the moment of the transfer of the material. It is generally 1.1 percent of net sales less 30 percent, which comes down to 0.77 percent of gross sales.²⁸

The forthcoming Module IV of this series will provide an in-depth analysis of the different aspects and the operation of the Multilateral System.

4.2.4. The Funding Strategy

The International Treaty creates a funding strategy to facilitate the mobilization of financial resources for the realization of its objectives (hereafter “Funding Strategy”). The Funding Strategy notably aims at supporting Contracting Parties in their efforts of implementing the national measures required to meet the International Treaty’s objectives. It was adopted at the first session of the Governing Body in 2006, based on Article 18 of the International Treaty.²⁹

Key points to remember:

- Articles 10-13 deal with the Multilateral System.
- The Multilateral System can be thought of as a global pool of PGRFA shared and managed jointly by all Contracting Parties.
- Under the Multilateral System, Contracting Parties grant each other facilitated access to their PGRFA of 64 of the most important food crops and forages for food security.
- The food crops and forages covered by the Multilateral System are listed in Annex I of the International Treaty.
- The list of Annex I-crops has been established according to the criteria of food security and interdependence.
- Annex I-crops provide for more than 80 percent of human calorie intake from plants.
- Contracting Parties include the collections of PGRFA from Annex I-crops they hold in national gene banks into the Multilateral System, and invite other institutions and organizations to do the same.
- The collections of the CGIAR Centres have also been included in the Multilateral System.
- Currently, the Multilateral System contains over 1.3 million samples of PGRFA.
- The SMTA is a standard contract for the transfer of PGRFA from Annex I-crops between providers and recipients.
- All users of PGRFA from the Multilateral System are encouraged to share their benefits with the Multilateral System.
- The International Treaty foresees options both for monetary and non-monetary benefit-sharing. Non-monetary benefit-sharing include information exchange, technology transfer and capacity building.
- Monetary benefit-sharing becomes mandatory when users develop a new variety that contains PGRFA obtained from the Multilateral System and they decide not to make the genetic material of this new variety again available through the Multilateral System for further agricultural research and breeding.

²⁸ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 13.2d)ii).

For the text of the SMTA see: <ftp://ftp.fao.org/ag/agp/planttreaty/agreements/smta/SMTAe.pdf>.

Please note that the SMTA allows also for an alternative payment scheme with a discounted rate of 0.5 percent during a fixed period of 10 years. Under this option the rate applies to all sales of PGRFA that belong to the same crop as the one obtained under the SMTA, regardless of whether or not they continue to be available for further research and breeding (see Article 6.11 and Annex 3 of the SMTA).

²⁹ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2006).



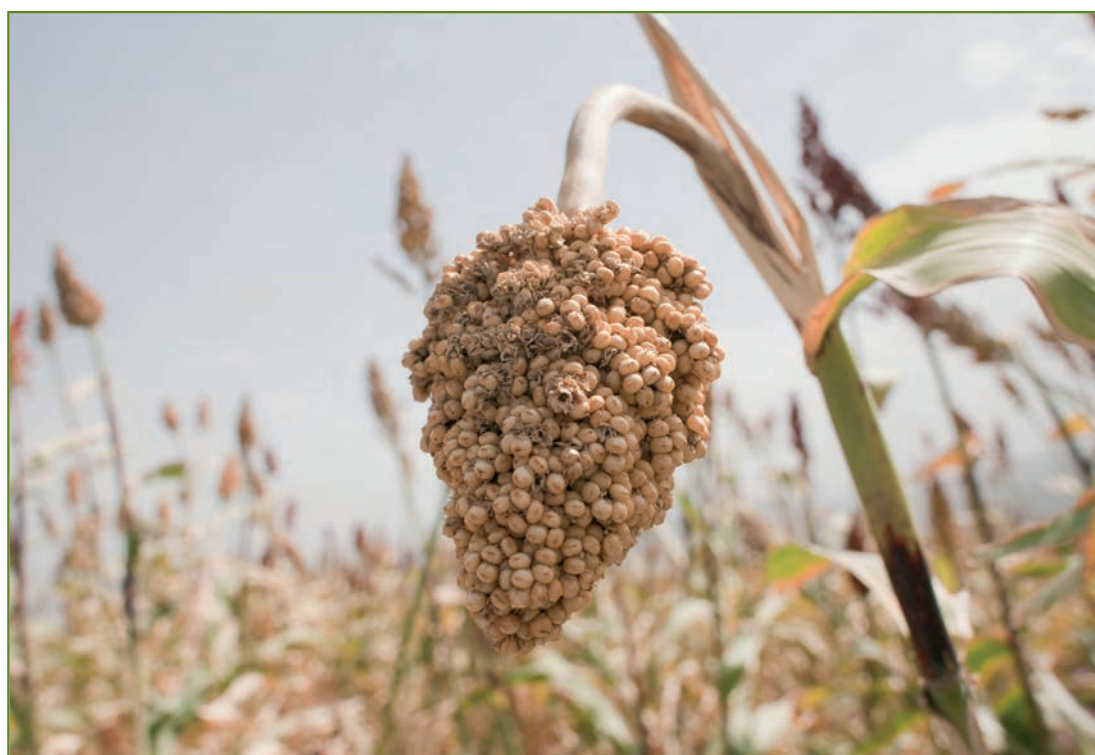
The Sources of the Funding Strategy

The Funding Strategy comprises resources over which the Governing Body has direct control, as well as resources that are allocated by other entities for the implementation of the International Treaty's objectives, over which the Governing Body does not have direct control.

Sources that are not under the direct control of the Governing Body include those financial resources that Contracting Parties invest within their own national context in policies, programmes and projects for the conservation and sustainable use of crop diversity. In addition, they embrace all those financial resources that are channelled into projects and programmes aiming at implementing the objectives of the International Treaty through bilateral, regional and multilateral cooperation among Contracting Parties. A third and important category of funding sources that are not under the direct control of the Governing Body include those financial resources that are allocated

by international mechanisms, funds and bodies other than the International Treaty, but pursuing the same objectives and therefore contributing to the implementation of the International Treaty.

One of the major sources of resources not under the direct control of the Governing Body is the Global Crop Diversity Trust (hereafter "Crop Trust"). The Crop Trust is an endowment fund that has been established in 2004 with the aim to conserve crop diversity in perpetuity. Its work focuses notably on strengthening the global system of *ex situ* conservation by supporting the activities of gene banks around the world. Together with the Government of Norway the Crop Trust covers the maintenance costs of the Svalbard Global Seed Vault (see Box 4.2). The Governing Body of the International Treaty has officially welcomed the Crop Trust as an essential element of its Funding Strategy. The Funding target of the Crop Trust is US\$ 260 million, which would generate roughly US\$ 12 million per



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year. Up to date it has raised over US\$ 150 million.³⁰

The sources that are under the direct control of the Governing Body are in part used for the organization of the regular sessions of the Governing Body and intersessional meetings of subsidiary bodies and expert groups. This includes also the work of the Secretariat of the International Treaty (hereafter “Secretariat”) in preparation for these meetings and in carrying out the tasks accorded to it by the Governing Body.

An important share of the resources under the direct control of the Governing Body flows directly into initiatives for the conservation and the sustainable use of PGRFA in developing countries. These are mainly voluntary contributions that are allocated for this purpose to the Benefit-sharing Fund of the International Treaty. Financial resource-

es resulting from monetary benefit-sharing from commercialization will also flow into the Benefit-sharing Fund.

The Benefit-sharing Fund of the Funding Strategy

The Benefit-sharing Fund is an innovative mechanism that seeks to share the global benefits that arise from the use of PGRFA directly with those who actively contribute to the conservation and sustainable use of crop diversity. The Benefit-sharing Fund supports initiatives that focus on on-farm management and conservation of PGRFA and the sustainable use of PGRFA, in Contracting Parties that are developing countries. It deserves special attention because it is the only source of funding for initiatives that aim at implementing the objectives of the International Treaty over which the Governing Body has direct control.

Table 4.1: The Sources of the Funding Strategy

1. Sources under the direct control of the Governing Body		
Financial resources resulting from <i>monetary benefit-sharing from commercialization</i> .	<i>Voluntary contributions</i> from Contracting Parties, the private sector, and other organizations and institutions.	Financial resources provided through the <i>Regular Programme of FAO</i> .
2. Sources not under the direct control of the Governing Body		
Resources allocated through <i>bilateral, regional and multilateral channels</i> .	Resources allocated by other <i>international mechanisms, funds and bodies</i> .	Resources allocated through <i>national activities</i> of Contracting Parties.

³⁰ Status 31 December 2010.

For more detailed information about the relationship of the Crop Trust and the International Treaty refer to lesson 5 of this module.



The Funding Sources of the Benefit-sharing Fund

The Benefit-sharing Fund is a trust account that was set up to collect the financial resources that arise from monetary benefit-sharing from commercialization referred to above in the context of the Multilateral System. In addition, it can also receive voluntary contributions by Contracting Parties, international institutions, foundations, the private sector and other possible sources.³¹

The Benefit-sharing Fund is thus fed by the first two sources illustrated in Table 4.1 above: financial resources from monetary benefit-sharing and voluntary contributions. In fact, up to date the Benefit-sharing Fund relies entirely on voluntary contributions. This is mainly because the process to develop a new crop variety until its commercialization takes about 10-15 years. Consequently, since

the International Treaty has only entered into force in 2004, mandatory monetary benefit-sharing from commercialization cannot realistically be expected before 2015-2020, approximately.

Early Implementation of the Benefit-sharing Fund

Thanks to early contributions by Contracting Parties³² the Governing Body was able to launch the Benefit-sharing Fund in 2009. A total of US\$ 550 000 was allocated to eleven small-scale projects in developing countries over a period of two years. In Peru, for example, the Benefit-sharing Fund supported the Potato Park of the ANDES association. This project helps enabling local farmers to adapt their traditional potato varieties to climate change.³³ This first round of projects supported by the Benefit-sharing Fund can be seen as the pilot implementation phase of the Benefit-sharing Fund.



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³¹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Arts. 13.2d)ii) and 18.4f).

³² The first donors included the Governments of Italy, Norway, Spain and Switzerland.

³³ For a short description of the first projects funded under the Benefit-sharing Fund see: http://ftp.fao.org/ag/agp/planttreaty/funding/pro_list09_01_en.pdf.



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In 2009, the Governing Body also approved the Strategic Plan for the Implementation of the Benefit-sharing Fund of the Funding Strategy (hereafter “Strategic Plan”). The Strategic Plan, as illustrated in Table 4.2 below, establishes a funding target of US\$ 116 million for the Benefit-sharing Fund, to

be reached over the five-year period between July 2009 and December 2014.³⁴

In July 2010 the Secretariat opened the second call for project proposals. The thematic focus of this second call for proposals was on ensuring sustainable food security by as-

Table 4.2: Plan to Secure the US\$ 116 million Objective in Commitments over a Five Year Period.

	Year 1 (18 months)	Year 2	Year 3	Year 4	Year 5
Cumulative Target (US\$ million)	10	27	50	80	116
Annual Target (US\$ million)	10	17	23	30	36
# Contracting Party contributions	5-7	6-8	6-8	10-14	10-14
% Contributed by Contracting Party	98-100%	90-95%	90-93%	80-85%	75-85%
# other contributors	0-3	2-4	4-6	6-10	8-12

³⁴ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009b).



sisting farmers to adapt to climate change through a targeted set of high impact activities. In fact, the United Nations Framework Convention on Climate Change (UNFCCC) officially recognizes the Benefit-sharing Fund as an option for adaptation funding.³⁵ For this second project cycle of the Interna-

tional Treaty, the Benefit-sharing Fund will be able to invest more than US\$ 10 million, which is in line with the Strategic Plan. This corresponds practically to a twentyfold increase of funds allocated under the Benefit-sharing Fund in a period of less than two years!³⁶

Key points to remember:

- The aim of the Funding Strategy is to mobilize sufficient financial resources for the realization of the objectives of the International Treaty.
- The Crop Trust is an essential element of the Funding Strategy in the area of *ex situ* conservation of PGRFA.
- The Benefit-sharing Fund is under the direct control of the Governing Body. It supports initiatives for the conservation and the sustainable use of PGRFA in developing countries, with a focus on on-farm conservation.
- The first project cycle under the Benefit-sharing Fund was launched in 2009 with a total of US\$ 550 000 in support of eleven small-scale projects for the conservation and the sustainable use of PGRFA in developing countries.
- Under the second project cycle starting in 2011 more than US\$ 10 million will be invested in around 30 projects under the thematic focus of ensuring sustainable food security by assisting farmers to adapt to climate change.
- The Strategic Plan establishes a funding target for the Benefit-sharing Fund of US\$ 116 million between July 2009 and December 2014.



³⁵ UNFCCC (2011).

³⁶ The major donors of the second call for project proposals included the Governments of Australia, Ireland, Italy, Norway and Spain.

All relevant information on the Call for Proposals 2010 is available at: http://www.planttreaty.org/funding_en.htm. The lessons of the forthcoming Module V of this series will provide in-depth information on the Funding Strategy in general and its Benefit-sharing Fund more specifically, and present examples of projects that have received funding under the Benefit-sharing Fund.

4.3. Governance of the International Treaty

4.3.1. The Governing Body

The Governing Body is the supreme decision-making body of the International Treaty. It is constituted by all Contracting Parties – i.e. those countries who have formally ratified, accepted, approved or acceded to the International Treaty.³⁷ Its core function is to promote the full implementation of the International Treaty.

The sessions of the Governing Body take place on a regular basis at least every two years to review the progress and programme of work of the International Treaty. Here, the representatives of the Contracting Parties meet to take the necessary decisions for the gradual implementation of the Inter-

national Treaty.³⁸ *Inter alia*, the Governing Body provides policy direction and guidance, and adopts plans, programmes and budgets. It is further empowered to establish subsidiary bodies (e.g. committees) and launch intersessional processes. The Governing Body may also consider and adopt amendments to the International Treaty.³⁹ The decisions of the Governing Body are generally taken by consensus among Contracting Parties.

For example, the Governing Body adopted the SMTA and the Funding Strategy at its first session in 2006, and at its third session in 2009 it adopted the Strategic Plan for the Implementation of the Benefit-sharing Fund of the Funding Strategy.



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³⁷ For a constantly updated list of Contracting Parties see: <http://www.fao.org/Legal/treaties/033s-e.htm>.

³⁸ For an overview of the reports and working documents of past sessions of the Governing Body see: http://www.planttreaty.org/gbpre_en.htm.

³⁹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 19.



4.3.2. The Bureau

The Bureau of the International Treaty is composed of the Governing Body's Chairperson and the Vice-Chairpersons, one for each region, which makes a total of seven Bureau members.⁴⁰ The Bureau members are elected by the Governing Body for the period in between two sessions, ensuring regional balance and coordination among the Contracting Parties of their region.⁴¹ The Bureau meets in the intersessional period in order to discuss focus topics to be addressed by the Governing Body, oversees the progress of the subsidiary bodies and processes and provides guidance to the Secretary. For example, in the context of the project cycle under the Benefit-sharing Fund, the Bureau assumes the role of selecting the project proposals to be funded.

4.3.3. The Secretary

The Secretary is appointed by the Director-General of FAO. Together with its staff

– jointly referred to as the Secretariat – the main functions of the Secretary are to provide practical and administrative support for the sessions of the Governing Body and to assist the Governing Body in carrying out its functions. The Secretary carries out the tasks conferred to him by the Governing Body. For the accomplishment of these tasks the Secretary establishes and maintains partnerships and cooperations with other relevant organizations and institutions.⁴²

The Secretariat also provides support for the Bureau and any other subsidiary body established by the Governing Body. Concretely, the Secretariat is responsible for the organization of the meetings of these bodies and the preparation of the necessary documentation. In addition, the Secretary communicates the decisions of the Governing Body, as well as any information received from Contracting Parties in accordance with the provisions of the International Treaty, to Contracting Parties and to the Director-General of FAO.⁴³



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⁴⁰ The Governing Body has seven regions: Africa, Asia, Latin America and the Caribbean, Near East, Northern America, South West Pacific.

⁴¹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 19.11.

⁴² For an overview on such partnerships and collaborations please refer to lesson 5 of this module (The Legal Architecture Governing Crop Diversity and Partnerships for Implementation).

⁴³ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 20.





4.3.4. A Glimpse at the Subsidiary Bodies and Intersessional Processes

In order to advance the Governing Body's work in the period between two sessions, a number of subsidiary bodies have been established. The subsidiary bodies are composed by experts from all world regions. They deliberate on the further implementation of certain components of the International Treaty and prepare strategies and legal text for the consideration and adoption by the Governing Body.

The following subsidiary bodies have been established to date:⁴⁴

- *Ad Hoc* Advisory Committee on the Funding Strategy
- *Ad Hoc* Technical Advisory Committee on the Standard Material Transfer Agreement and the Multilateral System
- *Ad Hoc* Working Group on Compliance
- *Ad Hoc* Third Party Beneficiary Committee

4.3.5. The Role of the National Focal Points

The National Focal Points are the contact persons appointed by the governments of Contracting Parties. They ensure the link between the international and the national level for all matters related to the International Treaty. The Secretariat channels its communications to Contracting Parties through their National Focal Points. The role of the National Focal Points is to communicate and coordinate issues related to the International Treaty with the relevant institutions and officials at the national level, as appropriate.

In order to facilitate the communication among Contracting Parties, a list with the contact details of National Focal Points is available online.⁴⁵ Contracting Parties that have not yet nominated a National Focal Point are invited to do so through their competent ministries.⁴⁶

⁴⁴ The roles and work of these subsidiary bodies will be presented in more detail in the lessons of forthcoming Module IV and Module V of this series in their respective context.

⁴⁵ See: http://www.planttreaty.org/members_en.htm.

⁴⁶ Nominations should be sent to pgrfa-treaty@fao.org.



Key points to remember:

- The Governing Body is the supreme decision-making body of the International Treaty.
- The Governing Body is constituted by all Contracting Parties and meets on a regular basis at least every two years.
- The Bureau is composed by the Chairperson and the Vice-Chairpersons of the Governing Body, one for each of the seven regions of the International Treaty.
- The Bureau meets between the session of the Governing Body to discuss intersessional work and focal topics to be addressed by the Governing Body, and to provide guidance to the Secretary.
- The Secretary provides support to the Governing Body to carry out its functions, including any subsidiary body established by the Governing Body.
- The Secretary also ensures communication with Contracting Parties, and establishes collaborations and partnerships that contribute towards the effective implementation of the International Treaty.
- Several subsidiary bodies have been established by the Governing Body. These are composed of experts from all regions. They prepare strategies and legal text for the consideration and adoption by the Governing Body.
- National Focal Points are the contact persons appointed by the governments of Contracting Parties for all matters related to the International Treaty.



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4.4. Conclusive Summary

The International Treaty can be understood as a ‘framework convention’, in the sense that it is continuously being further developed and implemented by its Contracting Parties.

The provisions related to conservation and sustainable use of PGRFA highlight the need for a complementary approach to *in situ* and *ex situ* conservation. Moreover, they emphasize the inherent linkage between the conservation and the sustainable use of crop diversity. Indeed, conserving PGRFA would be of little use if it is not done with the aim of subsequently using them for agricultural research and breeding, and finally cultivation and consumption.

The International Treaty is the first legally binding international agreement that acknowledges the contribution of farmers all over the world to the development and conservation of crop diversity. While the realization of the measures to promote Farmers’ Rights remains at the discretion of national authorities, the International Treaty advises Contracting Parties to implement national regulations related to Farmers’ Rights and provides farmers a basis to advocate their rights.

The Multilateral System of Access and Benefit-sharing is the core mechanism of the International Treaty. It can be thought of as a global pool of PGRFA shared and managed jointly by all Contracting Parties of the International Treaty, and from where PGRFA can be obtained on standardized terms. The

crops that make up the Multilateral System provide for more than 80 percent of human calorie intake from plants.

Up to date over 1.3 million samples of germplasm have been officially included into the Multilateral System by CGIAR Centres, Contracting Parties and other institutions. Material from the Multilateral System can be accessed for the purposes of agricultural research and breeding by anybody according to a standard contract, the SMTA. The SMTA facilitates exchanges of PGRFA and ensures that commercial benefits are shared in a fair and equitable way.

The Benefit-sharing Fund has a funding target of US\$ 116 million until 2014. It became functional in 2009, and in 2010 opened its second call for project proposals. For this second project cycle the Benefit-sharing Fund will invest more than US\$ 10 million in initiatives aiming at the conservation and sustainable use of PGRFA in Contracting Parties that are developing countries, and that have a focus on helping ensure sustainable food security by assisting farmers to adapt to climate change.

The Governing Body is the supreme decision-making body of the International Treaty, composed by the representatives of all Contracting Parties. It meets at least every two years with the task to promote the effective implementation of the International Treaty. The decisions of the Governing Body are taken by consensus.



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The Legal Architecture Governing Crop Diversity and Partnerships for Implementation



LESSON 5



Learning objectives

At the end of this lesson, the learner will:

- possess a sound understanding of the International Treaty's role within the broader international legal framework governing plant genetic resources; and
- be familiar with some of the main partnerships at the international level for the implementation of the International Treaty.



Target learner groups

Newcomers to the International Treaty and the policy area of crop diversity from all target learner groups (including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers' organizations and other civil society organizations, media, academia, prospective donors and other interested institutions).



Malus sylvestris, European Wild Apple, by Elizabeth Blackwell (1739)

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5.1. Overview of the Lesson

This lesson provides an overview of the role of the International Treaty on Plant Genetic Resources for Food and Agriculture (hereafter “International Treaty”) within the broader international legal architecture governing plant genetic resources. It further presents the International Treaty’s relationship with some international institutions and bodies that contribute towards the achievement of its objectives.

Several legal instruments and processes related to different aspects of plant genetic resources management exist at the international level. Aiming at providing a systematized overview, the first part of this lesson presents selected key instruments that are of direct relevance to the International Treaty, arranged by the policy area they address (conservation and sustainable use, access and benefit-sharing and intellectual property rights). The respective objectives and scopes of these instruments are outlined, focusing on their relationship with the International Treaty.

The second part of the lesson presents some of the main partnerships the Governing Body of the International Treaty (hereafter “Governing Body”) and its Secretariat maintain with other international institutions for the effective implementation of the International Treaty. Enumerating all partnerships and collaborations would go beyond the scope of this introductory lesson. It will thus be limited to those bodies that have entered into formal agreements with the International Treaty. As most of these bodies are being introduced elsewhere in this module, the lesson concentrates on the nature and area of their collaboration with the International Treaty.

After completion of this lesson the learner will have a sound understanding of the International Treaty’s role within the broader international legal framework governing PGRFA. The lesson furthermore contributes to prepare him or her for several lessons of the forthcoming educational modules of this series that will study the main components of the International Treaty in the context of other relevant institutions.



5.2. The International Legal Architecture Governing Plant Genetic Resources

While some of the instruments presented below are legally binding for the countries that have adhered to them, others are voluntary in nature – so-called ‘soft law’ instruments. Legally speaking, soft law instruments cannot be enforced upon countries. Soft law instruments are nevertheless of importance as they are negotiated in good faith. Once countries adopt a soft law instrument they are expected to meet their non-binding commitments under that instrument as reasonably as possible. Moreover, in many instances a soft law instrument can serve as a basis for the subsequent development of a legally binding instrument.¹

5.2.1. The Policy Area of Conservation and Sustainable Use of Genetic Resources

The Convention on Biological Diversity

This module refers repeatedly to the Convention on Biological Diversity (CBD). It is being addressed in the context of some of the terms and concepts in lesson 2, as well as in lesson 3 dealing with the historical background of the International Treaty.

The conservation of biological diversity and the sustainable use of its components are two of the three main objectives of the CBD. Legally binding in nature, the scope of the CBD covers all components



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¹ In this context the International Treaty is probably the best example of a legally binding instrument that has evolved on the basis of the International Undertaking on Plant Genetic Resources, which was a voluntary instrument. For more historical background on the International Undertaking and the negotiations of the International Treaty refer to lesson 3 of this module (History of the International Treaty).



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of biological diversity. By definition, this includes also crop diversity and plant genetic resources for food and agriculture (PGRFA).

Contracting parties to the CBD agree to develop national measures and policies for the conservation and sustainable use of biodiversity, stressing the need for a complementary approach to *in situ* and *ex situ* conservation, and recognize the important role of indigenous and local communities for effective *in situ* conservation. They agree to promote research and training related to the conservation and sustainable use of biodiversity, and to cooperate at all levels and notably in scientific activities. This includes exchanging information that is relevant to the conservation and the sustainable use of biodiversity.²

There are many parallels between the CBD and the International Treaty in the policy area of conservation and sustainable use of genetic resources. The two instruments' respective provisions are completely compatible and in line with each other. In this regard, the main difference is that the International Treaty is of a more specialized nature than the CBD. This means that its scope covers in particular the conservation and the sustainable use of PGRFA. The International Treaty's provisions respond to the specific needs and priorities related to the subset of biodiversity that is constituted by PGRFA, with the overall goal to achieve global food security.³ The effective implementation of the provisions on conservation and on sustainable use under the International Treaty directly contributes to achieving the objectives of the CBD in the area of crop diversity.

² Convention on Biological Diversity (1992), Arts. 1, 5-14, 17+18.

³ To learn more about the special nature of PGRFA in relation to other components of biodiversity see lesson 1 of this module (A Global Treaty for Food Security in an Era of Climate Change). For an overview of the International Treaty's provisions on conservation and sustainable use refer to lesson 4 of this module (Main Components and Governance of the International Treaty). In addition, the lessons of the forthcoming Module IV will provide an in-depth analysis of conservation and sustainable use in the context of the International Treaty.





The Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture

The Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (hereafter “Global Plan of Action”) recommends a set of programmes and activities for the conservation and the sustainable use of PGRFA at the community, national, regional and international level. It thereby aims at creating an efficient framework for cooperation, coordination and planning of efforts, and strengthening of capacities. The Global Plan of Action is a ‘rolling instrument’, which means that it is periodically updated according to evolving needs and priorities identified by international experts.⁴

Unlike the International Treaty, the Global Plan of Action is of a voluntary nature. However, not being legally binding on countries allows it to go into more detail in its recommendations that aim at ensuring the conservation and the sustainable use of PGRFA worldwide. Many of the over 160 countries that have formally adopted the Global Plan of Action have in fact designed their own national programmes according to its priority setting. The Global Plan of Action has indeed created an international common ground for coordinated action regarding the conservation and sustainable use of PGRFA.⁵

The International Treaty’s provisions on conservation and on sustainable use of PGRFA reflect the essence of the recommendations contained in the Global Plan of Action. In addition, the International Treaty, through its Article 14, integrates the Global Plan of Action as a supporting component. This gives the Global Plan of Action more weight, as the International Treaty provides its Contracting Parties with the legal basis for implementing the Global Plan of Action. By recognizing the Global Plan of Action as a supporting component of the International Treaty, Contracting Parties formally agreed to promote its effective implementation. In this sense the two instruments mutually reinforce each other.⁶

Genebank Standards

The Genebank Standards are voluntary standards for the harmonization of *ex situ* seed storage in gene bank facilities worldwide. They were endorsed by the FAO Commission on Genetic Resources for Food and Agriculture (hereafter “Commission”) in 1993.⁷ The Genebank Standards are designed for the use of gene bank managers and their staff at the national, regional and international level. They explain in a technical and detailed manner under what conditions germplasm is to be stored and preserved in order to ensure quality and conservation of the material.⁸ The International Agricultural Research Centres of the Consultative Group on International Agricultural Research (hereafter “CGIAR Centres”), for instance, are committed to manage and administer their *ex situ* collections in accordance with the Genebank Standards.⁹

⁴ FAO (1996).

⁵ For an overview of the coordinated action see the Global Monitoring System of the Global Plan of Action: <http://www.pgrfa.org/gpa/selectcountry.aspx>.

⁶ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 14.

⁷ At the time of the elaboration of the Genebank Standards, the Commission was still called ‘Commission on Plant Genetic Resources’. The Commission’s mandate was broadened by the FAO Conference in 1995 to cover all components of biodiversity of relevance to food and agriculture. Accordingly, the Commission was renamed ‘Commission on Genetic Resources for Food and Agriculture’.

⁸ FAO (1993b).

⁹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 15.1d).



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Although the Genebank Standards were endorsed well before the adoption of the International Treaty, they provide guidance on how certain aspects related to the provisions on *ex situ* conservation contained in the International Treaty can be adapted to and implemented at the gene bank level.¹⁰

Key points to remember:

- The CBD is a legally binding instrument. Its scope covers all components of biological diversity.
- The respective provisions of the CBD and the International Treaty in the area of conservation and sustainable use of genetic resources are completely compatible and in line with each other.
- Effectively implementing the provisions on conservation and on sustainable use of the International Treaty directly contributes to achieving the objectives of the CBD in the area of crop diversity.
- The Global Plan of Action is a voluntary instrument that recommends a set of programmes and activities for the conservation and the sustainable use of PGRFA.
- The International Treaty integrates the Global Plan of Action as a supporting component. Thereby, it provides its Contracting Parties with the legal basis for implementing the Global Plan of Action.
- The Genebank Standards are voluntary standards for the harmonization of *ex situ* seed storage in gene bank facilities worldwide.
- The Genebank Standards provide guidance on how certain aspects related to the provisions on *ex situ* conservation contained in the International Treaty can be adapted to and implemented at the gene bank level.

¹⁰ In 2009, the Governing Body invited the Commission to update the Genebank Standards. The process has started and the revised Genebank Standards are foreseen to be adopted by the Commission at its Thirteenth Regular Session in November 2011.



5.2.2. The Policy Area of Access and Benefit-sharing in Relation to Genetic Resources

The CBD, the Bonn Guidelines and the Nagoya Protocol

The CBD

The CBD was the first international legally binding instrument that adopted the concept of access and benefit-sharing (ABS). The fair and equitable sharing of benefits that are obtained through the use of genetic resources is the third of the three objectives of the CBD.¹¹

In a simplified way, ABS can be understood as a mechanism that regulates the exchange of a given resource between certain actors. In the context of biological diversity, ABS regulates exchanges of genetic material between a legitimate holder and a subsequent user of genetic resources. The CBD laid down the broad principles that countries are to respect when requesting and granting each other access to their genetic resources. These foresee that benefits that may arise from the use of

such genetic resources be shared in a fair and equitable way with the country granting access (e.g. non-monetary benefits such as research results or also possible monetary benefits from the commercialization of a product that has been developed on the basis of the accessed resource).

The basis for ABS under the CBD is laid down in its Article 15:

- National governments hold the authority to grant or deny access to anyone asking for access to any given genetic resource under their jurisdiction. However, they shall not restrict access to their genetic resources in the case that such a restriction would run counter the objectives of the CBD.
- The two conditions that are central to ABS under the CBD are: (1) the prior informed consent (PIC) of the party holding the genetic resource; and (2) that the terms upon which access is granted, as well as for the sharing of the benefits between the two parties, are mutually agreed upon (the condition of mutually agreed terms or MAT).



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¹¹ Convention on Biological Diversity (1992), Article 1.

The Bonn Guidelines

While the basic principles for an ABS mechanism regulating exchanges of genetic resources were herewith established, such a mechanism was still far from being operational when the CBD entered into force. In an attempt to assist national governments to comply with their obligations related to ABS, the decision-making body of the CBD (in the context of the CBD called “Conference of Parties”) adopted the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization (hereafter “Bonn Guidelines”).

The Bonn Guidelines aim at assisting governments and other stakeholders in developing an overall ABS strategy, and in identifying the steps involved in the process of obtaining access to genetic resources and benefit-sharing. More specifically, these voluntary guidelines are meant to assist governments and other stakeholders when establishing legislative, administrative or policy measures on ABS and

when negotiating contractual arrangements for ABS. To that end they include detailed recommendations for the implementation of ABS strategies, including with regard to the distribution of roles and responsibilities in ABS systems. Notably, the Bonn Guidelines propose elements for effective mechanisms to ensure compliance with the principles of PIC and MAT.¹²

The Nagoya Protocol

Negotiations on a legally binding agreement on ABS that would aim at regulating international exchanges of all genetic resources (except human genetic resources), including for purposes other than agriculture, started in the framework of the CBD in 2005. They culminated in October 2010 in the adoption of the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (hereafter “Nagoya Protocol”). The Nagoya Protocol is foreseen to enter into force in 2012.



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¹² Secretariat of the Convention on Biological Diversity (2002).



The Nagoya Protocol requires that the countries that adhere to it take legislative, administrative or policy measures to ensure that benefits that arise from the utilization of genetic resources are shared upon mutually agreed terms and in a fair and equitable way with the provider country of these resources. The recipient of the material also has to ensure that the prior informed consent of the country granting access to its genetic resources is established. The Nagoya Protocol notably provides for the creation of internationally recognized certificates of compliance to serve as evidence that the genetic resources which they cover have been accessed in accordance with PIC and MAT. However, such measures – including the certificates of compliance – are to be developed at the national level and it is therefore likely that they may vary from country to country. This implies that gener-

ally the terms of exchange would have to be negotiated and agreed on a case by case basis.

Since the entry into force of the International Treaty in 2004, its Multilateral System of Access and Benefit-sharing (hereafter “Multilateral System”) has established itself as an efficient ABS mechanism in the domain of PGRFA. In order to facilitate access to PGRFA in compliance with the conditions of PIC and MAT according to the CBD, the Contracting Parties of the International Treaty have designed a standard contract (the Standard Material Transfer Agreement, or simply SMTA) to be used for transfers of PGRFA under the Multilateral System. The SMTA provides for transparent regulations regarding access and lays down clear terms for monetary benefit-sharing.

Box 5.1: The Basics of the Multilateral System of Access and Benefit-sharing of the International Treaty

Within the Multilateral System, the Contracting Parties of the International Treaty grant each other facilitated access to their genetic resources of 64 food crops and forages for purposes of agricultural research and breeding. These food crops and forages contained in the Multilateral System are listed in Annex I of the International Treaty. They include a number of the most important PGRFA for food security. The Contracting Parties of the International Treaty also agree to share the benefits that may arise from the use of these PGRFA in a fair and equitable way among each other. The Multilateral System foresees the possibility to share benefits both in non-monetary terms – through technology transfer, information exchange and capacity building – as well as to share monetary benefits arising from the use of PGRFA.

This multilateral approach to access and benefit-sharing – based on transparent and standardized procedures – is the truly innovative feature of the International Treaty. The Multilateral System accounts for the fact that PGRFA, unlike certain other types of genetic resources, rely on being constantly exchanged and used in order for crop diversity to be conserved and increased. The Multilateral System is of particular importance for the achievement of food security in the context of climate change as it facilitates agricultural research and breeding activities.¹³



¹³ The Multilateral System is dealt with in lesson 4 of this module (Main Components and Governance of the International Treaty). An in-depth analysis of the different aspects and the operation of the Multilateral System will be provided in the forthcoming Module IV of this series.

The acceptance of the terms of the SMTA by both the provider and the recipient of PGRFA in a transfer of genetic material ensures that the conditions of PIC and MAT are fulfilled. The Multilateral System and the ABS provisions of the CBD are therefore in mutual harmony. The SMTA facilitates the exchange of PGRFA by providing legal certainty and transparency. Consequently, many countries and institutions holding PGRFA have decided to apply the terms of the SMTA also in transfers of PGRFA that are not listed in Annex I.¹⁴ The Multilateral System of the International Treaty thus contributes substantially to the implementation of the CBD with regards to ABS in the area of PGRFA.

The existence and functioning of the Multilateral System has therefore been considered in the Nagoya Protocol. In fact, the decision by which the Nagoya Protocol was adopted recognizes the International Treaty as one

of the four components of the international regime on access to genetic resources and benefit-sharing.¹⁵ The Nagoya Protocol recognizes the interdependence of all countries with regard to PGRFA, as well as the special nature of PGRFA and their importance for food security. In this context, it acknowledges the fundamental role of the International Treaty, recalling notably its Multilateral System.

Article 3 *bis* of the Nagoya Protocol states clearly that, where a specialized international ABS instrument that is consistent with and does not run counter to the objectives of the CBD and the Nagoya Protocol – such as the Multilateral System of the International Treaty – applies, the Nagoya Protocol will not apply for the countries that are parties to the specialized instrument “in respect of the specific genetic resource covered by and for the purpose of the specialized instrument.”¹⁶



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¹⁴ In that case, although the text of the agreement under which the non-Annex I material is transferred is identical to the SMTA, legally speaking it cannot be considered as an SMTA under the International Treaty since certain provisions in the SMTA are specific to the International Treaty and the Multilateral System.

¹⁵ Secretariat of the Convention on Biological Diversity (2010), Decision X/1, pp. 83-86.

The other three components mentioned in the decision are the CBD, the Nagoya Protocol and the Bonn Guidelines.

¹⁶ Nagoya Protocol (2010), Preamble, Arts. 3*bis*, 4, 5+13.





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In the context of PGRFA, concretely, this means that genetic material of the food crops and forages contained in Annex I of the International Treaty fall under the terms for facilitated exchange of the Multilateral System. For PGRFA that are not listed in Annex I of the International Treaty the terms of access and benefit-sharing of the Nagoya Protocol will apply. This, however, does not preclude that the legitimate holders of non-Annex I-crops may opt to apply the terms of the SMTA of the International Treaty as a means to comply with the Nagoya Protocol.¹⁷ Yet, all exchanges of genetic resources that are not of plant origin, have no potential value for food and agriculture, and/or are not to be used for agricultural research and breeding activities, will be regulated by the Nagoya Protocol.

The International Code of Conduct for Plant Germplasm Collecting and Transfer

The International Code of Conduct for Plant Germplasm Collecting and Transfer (hereafter “Code of Conduct”) is a voluntary instru-

ment that aims at promoting the rational collection and sustainable use of PGRFA, preventing genetic erosion, and protecting the interests of both providers and collectors of germplasm. It sets out minimum responsibilities of collectors, providers, gene bank managers and users of collected germplasm, in the collection and transfer of plant germplasm. The Code of Conduct was adopted by the Conference of the Food and Agriculture Organization of the United Nations (FAO) in 1993 and addresses primarily governments.¹⁸

In the context of the International Treaty, the Code of Conduct is of special relevance to the issue of access to PGRFA found in *in situ* conditions. The International Treaty foresees that such access shall be provided according to national legislation. In the absence of national legislation, the Governing Body may set international standards for access to Annex I *in situ* material, which may be based, for instance, on the voluntary standards set out in the Code of Conduct.¹⁹

¹⁷ See above annotation (footnote 14).

¹⁸ FAO (1993a).

¹⁹ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 12.3h).



Key points to remember:

- The CBD was the first international legally binding instrument that introduced the concept of ABS.
- The CBD laid down the broad principles that countries are to respect when requesting and granting each other access to their genetic resources: prior informed consent (PIC) and mutually agreed terms (MAT).
- The voluntary Bonn Guidelines are meant to assist governments and other stakeholders when establishing legislative, administrative or policy measures on ABS and when negotiating contractual arrangements for ABS.
- The Nagoya Protocol is a legally binding instrument to regulate international exchanges of all genetic resources (except human genetic resources).
- The decision by which the Nagoya Protocol was adopted recognizes the International Treaty as one of the four components of the international regime on access to genetic resources and benefit-sharing.
- The Nagoya Protocol requires that the countries that adhere to it take measures to ensure compliance with PIC and MAT in transfers of genetic resources.
- The SMTA of the International Treaty ensures compliance with PIC and MAT in transfers of PGRFA that are part of the Multilateral System.
- The Multilateral System of the International Treaty and the ABS provisions of the CBD and the Nagoya Protocol are in mutual harmony.
- The Nagoya Protocol acknowledges the fundamental role of the International Treaty with regard to ABS in the area of PGRFA, recalling notably its Multilateral System.
- Genetic material of the food crops and forages contained in Annex I of the International Treaty fall under the terms for facilitated exchange of the Multilateral System. For PGRFA that are not listed in Annex I of the International Treaty the terms of access and benefit-sharing of the Nagoya Protocol will apply.
- The Code of Conduct is a voluntary instrument that sets out minimum responsibilities of collectors, providers, gene bank managers and users of collected germplasm, in the collection and transfer of plant germplasm.



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5.2.3. The Policy Area of Intellectual Property Rights in the Domain of Genetic Resources

Broadly speaking, intellectual property rights (IPR) are a form of protection for inventions or products with certain unique characteristics. The rationale for granting IPR basically is to reward innovators and producers for their efforts during the phase of development and to compensate them for their investments during that period, with the aim to boost innovations.

Different forms of IPR, such as trademarks, copyrights, geographical indications and patents, can be applied to a whole range of products such as artworks or scientific innovations. IPR in the form of patents and copyrights generally prevent others from commercializing or using a product for a defined period without the authorization of the inventor or creator. Geographic indications protect products that originate in specific geographic areas that award them special qualities.

Different schemes of IPR also apply to crop varieties. In this context, it is important to note that the International Treaty is neutral with regard to IPR. It neither bans nor encourages their use.

However, under the International Treaty all holders of crop genetic material that is covered by the Multilateral System are invited to grant facilitated access to this material to agricultural researchers and breeders without restriction. In addition, IPR cannot be vested in any crop genetic material in the same form it was received from the Multilateral System. The International Treaty encourages breeders which develop new varieties that incorporate material originating from the Multilateral System to make samples of the new varieties again available through the Multilateral System. If they decide not to do so, they are required to make a mandatory payment into the Benefit-sharing Fund of the Funding Strategy of the International Treaty (hereafter “Benefit-sharing Fund”).²⁰



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²⁰ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 12. For more information on the Multilateral System and the Benefit-sharing Fund please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

We will now have a look at the major international agreements dealing with IPR in the domain of plant varieties, in order to analyze how they interact with the International Treaty.

The UPOV Convention

UPOV is the French acronym for the International Union for the Protection of New Varieties of Plants.²¹ It was established by the International Convention for the Protection of New Varieties of Plants (hereafter “UPOV Convention”), which is of a legally binding nature on its contracting parties.²² UPOV’s objective is to establish an effective system for the protection of plant varieties by an intellectual property right, in order to encourage the development of new plant varieties, for the benefit of society.²³

The form of IPR granted under the UPOV Convention is commonly referred to as plant breeders’ rights (PBR). In order for a breeder to obtain a plant breeders’ right (PBR) for a new plant variety under the UPOV Convention the following four criteria must be met:

- *Novelty*: a plant variety must be new to the market of the country where the PBR is applied for and other contracting parties of UPOV;
- *Distinctiveness*: the variety must be distinct from other known existing varieties;
- *Uniformity*: the variety must be homogeneous; and
- *Stability*: the unique traits of the variety must be stable, so that the variety remains true to type after repeated cycles of reproduction.



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²¹ In French: Union internationale pour la protection des obtentions végétales.

²² The UPOV Convention was signed in 1961. It was revised three times, in 1972, 1978 and 1991. The 1991 Act entered into force in 1998. New contracting parties can only adhere to the 1991 Act, whereas the previous Acts remain in force for those countries that have adhered to the UPOV convention earlier. In the context of this lesson, reference to the UPOV Convention means the 1991 Act.

²³ See UPOV’s missions statement at: <http://www.upov.int/en/about/>.





Once granted a PBR, the breeder can, for example, require a licensing fee for any company interested in reproducing his or her variety for sale. The PBR is valid for a fixed time frame of generally 20 years.²⁴

Of special interest to the relationship of the UPOV Convention with the International Treaty are the so-called ‘breeder’s exemption’ and the ‘farmers’ privilege’ clauses. The breeders’ exemption clause stipulates that a breeder’s authorization is not required to use a protected variety for private, non-commercial and experimental purposes, and for the breeding of new varieties that are not essentially derived from the protected variety. The farmers’ privilege clause foresees that, subject to national legislation, a protected variety can be used without authori-

zation for the purposes of subsistence farming, as opposed to commercial cash crop farming.²⁵

Insofar as the breeder’s exemption clause allows for further agricultural research and breeding, a PBR can be interpreted as not restricting access to PGRFA according to the terms of the International Treaty.²⁶ In that case, breeders are free to protect a new variety that incorporates crop genetic material from the Multilateral System with a PBR without being subjected to the mandatory requirement of paying a share of their monetary benefits from commercialization into the Benefit-sharing Fund. However, they would still be encouraged to pay an equitable share of the monetary benefits into the Benefit-sharing Fund on a voluntary basis.²⁷



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²⁴ International Convention for the Protection of New Varieties of Plants (1991), Arts. 14+19.

²⁵ *Idem*, Article 15.

²⁶ Please note that under the 1991 Act of the UPOV Convention, this only holds true if the material is used for agricultural research and breeding of new varieties that are not “essentially derived” from the material used for the development of the new variety, i.e. where the new variety does not conform to the initial variety in the expression of its essential characteristics.

²⁷ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 13.2d)ii). The Benefit-sharing Fund collects the monies that accrue through monetary benefit-sharing, as well as voluntary contributions. The financial resources of the Benefit-sharing Fund are used to support projects for the conservation and sustainable use of crop diversity. For more information on the Multilateral System and the Benefit-sharing Fund please refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

The TRIPS Agreement

The Agreement on Trade-Related Aspects of Intellectual Property Rights (hereafter “TRIPS Agreement”) is a legally binding international agreement administered by the World Trade Organization (WTO) that sets up minimum standards for different forms of intellectual property for WTO member states. The objective of the TRIPS Agreement is to protect and enforce IPR in order to contribute to the “promotion of technological innovation [...] in a manner conducive to social and economic welfare [...]”.²⁸ Ratification of the TRIPS Agreement is a compulsory requirement of World Trade Organization membership.

Article 27.3b) of the TRIPS Agreement is of special relevance to the relationship with the International Treaty. In its essence, this provision requires WTO member states to provide for a system of intellectual property protection for plant varieties. Either such a system would have to be based on patents, an effective *sui generis* system, or a combination of both. A *sui generis* system (literally: system

“of its own kind”) can be understood as a customized intellectual property system especially designed for the type of matter to be protected and taking into account socio-economic conditions of a given country. Plant Breeders’ Rights under the UPOV Convention are an example of a *sui generis* system for plant varieties.

Any Contracting Party of the International Treaty that is also a member state of the WTO adheres to the requirement under the TRIPS Agreement to provide for a system of intellectual property protection for plant varieties. Accordingly, a breeder who is under the jurisdiction of such a country has the possibility to protect a new plant variety that incorporates crop genetic material received from the Multilateral System by a patent or a PBR.

We have already looked at the effects of plant breeders’ rights in relation to the Multilateral System in the context of the UPOV Convention above. The case of patents is similar, with the difference that in most countries which opt



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²⁸ Agreement on Trade-Related Aspects of Intellectual Property Rights (1994), Article 7.





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for patents for the protection of new plant varieties, such patents do not allow for agricultural research and breeding without the authorization of the patent holder. In such a setting, a breeder having used crop genetic material

from the Multilateral System for the development of a new variety would be subjected to the mandatory requirement of paying a share of his or her monetary benefits from commercialization into the Benefit-sharing Fund.

Key points to remember:

- UPOV's objective is to establish an effective system for the protection of plant varieties by an intellectual property right in order to encourage the development of new plant varieties for the benefit of society.
- IPR under the UPOV Convention are commonly referred to as 'plant breeders' rights'.
- The so-called 'breeders' exemption clause' under the UPOV Convention stipulates that a breeder's authorization is not required to use a protected variety for private, non-commercial and experimental purposes, and for the breeding of new varieties that are not essentially derived of the protected variety.
- Insofar as the breeder's exemption clause allows for further agricultural research and breeding, a PBR can be interpreted as not restricting access to PGRFA according to the terms of the International Treaty.
- The TRIPS Agreement is a legally binding international agreement administered by WTO that sets up minimum standards for different forms of intellectual property.
- The TRIPS Agreement requires WTO member states to provide for a system of intellectual property protection for plant varieties. Either such a system would have to be based on patents, an effective *sui generis* system (such as plant breeders' rights under the UPOV Convention), or a combination of both.
- In the case of most countries that opt for patents for the protection of new plant varieties, such patents do not allow for agricultural research and breeding without the authorization of the patent holder.
- Where access for agricultural research and breeding to a new plant variety that incorporates PGRFA from the Multilateral System of the International Treaty is restricted, the requirement to make a mandatory payment into the Benefit-sharing Fund will be triggered.



Table 5.1: An Overview of Legal Instruments Related to PGRFA

Law or Policy	Topic / Applicability	Status / Jurisdiction
International Treaty on Plant Genetic Resources for Food and Agriculture	<ul style="list-style-type: none"> Covers all PGRFA (does not regulate non-food and non-agricultural uses) and addresses diverse topics, including conservation and sustainable use, Farmers' Rights and access and benefit-sharing. Establishes a Multilateral System for selected crops (64 food crops and forages). Regulates access and benefit-sharing for these materials (both <i>ex situ</i> and <i>in situ</i>). Does not specify access and benefit-sharing rules for PGRFA not in the Multilateral System (except for CGIAR and other international institutions' holdings of such crops that are covered under agreements signed with the Governing Body under Article 15 of the International Treaty agreements). 	<ul style="list-style-type: none"> Entered into force on 29 June 2004. Legally binding for all Contracting Parties (126 as of December 2010).
Convention on Biological Diversity (CBD)	<ul style="list-style-type: none"> Covers all biodiversity. Provides general principles for access and benefit-sharing concerning materials accessed after its entry into force and that are not covered by the International Treaty. 	<ul style="list-style-type: none"> Entered into force in 1993. Legally binding for countries that have ratified (193 as of December 2010)
TRIPS Agreement	<p>Member States:</p> <ul style="list-style-type: none"> Must comply with minimum standards of protection of intellectual property. Must ensure protection of micro-organisms, non-biological and microbiological processes and plant varieties that meet protection criteria. 	<ul style="list-style-type: none"> Entered into force in January 1995. Legally binding for all WTO members that have ratified it (153 as of December 2010).
UPOV Convention	<ul style="list-style-type: none"> Through a succession of international laws, UPOV aims to establish an efficient system for the protection of plant varieties by an intellectual property right, and to harmonize national laws for protecting plant varieties. 	<ul style="list-style-type: none"> Four versions (1961, 1972, 1978 and 1991; only 1991 still open for ratification). Legally binding for ratifying countries (68 as of December 2010).
Agreements entered into by the Governing Body of the International Treaty and the CGIAR Centres and other international institutions under Article 15 of the International Treaty	<ul style="list-style-type: none"> Agreements place the <i>ex situ</i> collections held in trust by the CGIAR Centres and other international institutions within the purview of the International Treaty. Agreements deal with the availability of both Annex I and non-Annex I PGRFA. 	<ul style="list-style-type: none"> Eleven CGIAR Centres (those having <i>ex situ</i> collections) have signed binding agreements with the Governing Body. Agreements replace previous agreements signed with FAO placing the collections under the auspices of FAO.



Law or Policy	Topic / Applicability	Status / Jurisdiction
Global Plan of Action	<ul style="list-style-type: none"> Contains specific 'activities' in regard to <i>in situ</i> conservation and development; <i>ex situ</i> conservation and utilization; and institutions and capacity building. The Global Plan of Action is a 'rolling instrument' and is now in the process of being updated. 	<ul style="list-style-type: none"> Adopted in 1996 by the 4th International Technical Conference on PGRFA (150 countries). Not legally binding. Serves as framework, guide and catalyst for PGRFA efforts. Is a supporting component of the International Treaty: has bearing on and relation to a legally binding agreement.
Agreement for the Establishment of the Global Crop Diversity Trust	<ul style="list-style-type: none"> Establishes the Global Crop Diversity Trust, which is an endowment fund set up to finance long-term <i>ex situ</i> conservation of PGRFA as part of a rational global system. 	<ul style="list-style-type: none"> Entered into force in 2004. Now has some 26 signatories.
Genebank Standards	<ul style="list-style-type: none"> Set out recommended gene bank storage standards for seeds of orthodox species. 	<ul style="list-style-type: none"> Recommended by FAO and IPGRI (now Bioversity International) to be used as the reference in national, regional and international gene banks. Endorsed in 1993 by the FAO Commission on Plant Genetic Resources. Not legally binding.
Code of Conduct for Plant Germplasm Collecting and Transfer	<ul style="list-style-type: none"> Deals with the etiquette of collecting and transfer of PGRFA. Has provisions on collectors' permits, responsibilities of collectors, sponsors, curators and users, as well as on reporting, monitoring and evaluating observance of the Code of Conduct. 	<ul style="list-style-type: none"> Adopted by the FAO Conference in 1993. Not legally binding. Note: <i>both the International Treaty and the CBD have provisions that add to or modify the guidance provided by the Code of Conduct.</i> Article 12.3h) of the International Treaty provides that the Governing Body may set standards regarding access to PGRFA found in <i>in situ</i> conditions.

Source: The International Treaty on Plant Genetic Resources for Food and Agriculture in the context of Other Legal Instruments.²⁹

²⁹ Table adapted from Moore and Goldberg (2010), pp. 2-4.



5.3. Partnerships and Collaborations for the Implementation of the International Treaty

The Secretariat and the Governing Body of the International Treaty maintain numerous relationships with other international organizations, treaty bodies, intergovernmental agencies, relevant FAO departments, Contracting Parties, non-Contracting Parties, civil society and other entities. Enumerating all these partnerships and collaborations would go beyond the scope of this introductory lesson. This section will thus be limited to those bodies that have entered into formal agreements with the International Treaty. Further partnerships and collaborations will be presented in the forthcoming educational modules of this series in their specific context.³⁰

5.3.1. The Food and Agriculture Organization of the United Nations

FAO is a specialized organization of the United Nations. Its mandate is to achieve global food security through raising levels of nutrition, improving agricultural productivity, bettering the lives of rural populations and contributing to the growth of the world economy. FAO acts as a neutral forum serving both developed and developing countries where all nations meet as equals to negotiate agreements and debate policy. FAO is also a source of knowledge and information that helps developing countries and countries in transition modernize and improve agricul-

Box 5.2: The Global Partnership Initiative for Plant Breeding Capacity Building

The Global Partnership Initiative for Plant Breeding Capacity Building (GIPB) is a multi-party initiative of knowledge institutions around the world, physically located within the technical branch of FAO's Plant Production and Protection Division (AGP). It aims at enhancing developing countries' capacities to improve crops for food security and sustainable development through better plant breeding and delivery systems. Thereby the GIPB directly contributes to the International Treaty's objectives mainly in relation to the sustainable use of PGRFA.

The GIPB aims at achieving its objectives through the following activities:³¹

- Support for policy development on plant breeding and to help allocate resources to strengthen and sustain developing countries' capacity to use PGRFA;
- Provision of capacity building relevant to the utilization of plant genetic resources, and in particular to plant breeding;
- Facilitate access to technologies;
- Facilitate exchange of plant genetic resources to enhance the genetic and adaptability base of improved cultivars in developing countries; and
- Sharing of information focused on plant breeding capacity building with national policy makers and breeders in developing country programmes.

The Secretariat of the International Treaty has participated in task force meetings of the GIPB, and the two entities hold regular coordination meetings. Furthermore, the GIPB provides support to the Secretariat of the International Treaty in the preparation of documents for the sessions of the Governing Body related to the sustainable use of PGRFA.

³⁰ For a more complete overview of partnerships and collaborations refer to: <ftp://ftp.fao.org/ag/agp/planttreaty/gb3/gb3w18e.pdf>.

³¹ GIPB (2011).



ture, forestry and fisheries practices and ensure good nutrition for all.

The International Treaty was negotiated within the FAO Commission on Genetic Resources for Food and Agriculture (see below) and adopted by the FAO Conference.³² The Secretariat of the International Treaty is physically located in the premises of FAO headquarters. It forms part of FAO's Plant Production and Protection Division (AGP). The Secretariat maintains numerous partnerships and collaborations with different units and divisions within FAO.

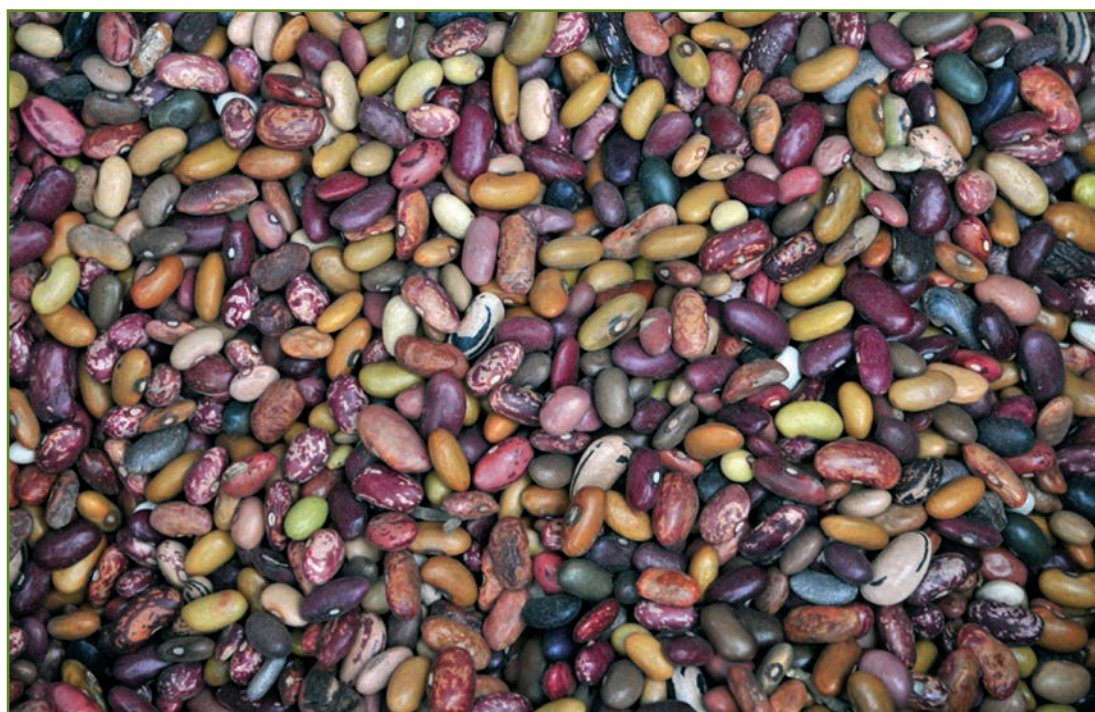
5.3.2. The Global Crop Diversity Trust

The Global Crop Diversity Trust (hereafter "Crop Trust") is an essential element of the Funding Strategy of the International Treaty in relation to *ex situ* conservation and availability of PGRFA. This was recognized by the

Governing Body of the International Treaty at its first session in 2004. The Governing Body also established that it will maintain the overall policy guidance over the Crop Trust.³³

This was retained in a formal relationship agreement between the Governing Body of the International Treaty and the Crop Trust in 2006. The relationship agreement foresees that the Governing Body has the capacity to appoint four members to serve on the executive board of the Crop Trust. The board retains full executive independence over the activities of the Crop Trust, including in relation to the allocation of grants. Furthermore, the executive board of the Crop Trust submits a regular report on its activities to the Governing Body.³⁴

With the aim to support the effective implementation of the International Treaty, up to



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³² It was adopted at the Thirty-first Session of the FAO Conference on 3 November 2001.

For more background information on the origins of the International Treaty refer to lesson 3 (History of the International Treaty).

³³ To learn more about the Crop Trust in the context of the Funding Strategy of the International Treaty refer to lesson 4 of this module (Main Components and Governance of the International Treaty).

³⁴ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2006).

Box 5.3: Genesys – a Joint Effort for Facilitated Access to PGRFA

In order to enhance the use of crop samples conserved in gene banks worldwide by making them readily available to agricultural researchers and breeders, the Secretariat of the International Treaty has joined forces with the Crop Trust and Bioversity International for the establishment of a global information technology system on PGRFA: Genesys.

Genesys is a global database that brings together the passport, characterization and evaluation data that describe PGRFA contained in regional and national crop databases. By the end of 2010 Genesys allowed plant breeders to locate and search for specific traits of almost 2.4 million samples of PGRFA held in *ex situ* collections around the world.

The ambition of this joint effort is to have one single entry point that would allow searching the totality of the about 7 million PGRFA samples contained in *ex situ* collections worldwide.³⁵

The Genesys database is available at: <http://www.genesys-pgr.org/>.

date the Crop Trust has focused on the following main activities to strengthen the global system of *ex situ* conservation:³⁶

- regeneration, characterization, documentation and safety duplication of endangered samples of PGRFA held by gene banks in developing countries;
- screening of gene bank collections;
- research into better means for conserving vegetatively propagated samples; and
- the development of information technology systems to improve gene bank management and enhance the ability of breeders and researchers to search specific samples of PGRFA held by gene banks globally.

5.3.3. The CGIAR Centres

In 1994, the CGIAR Centres concluded agreements with FAO to place their collections of germplasm under the auspices of FAO for the benefit of the international

community. It was understood that these agreements were transitory, pending completion of the negotiations on the International Treaty.³⁷

Through the International Treaty, its Contracting Parties recognize the importance of the *ex situ* collections of PGRFA held by the CGIAR Centres and called upon them to sign agreements with the Governing Body to make their collections available under the conditions of the Multilateral System.³⁸ The CGIAR Centres did so in October 2006.³⁹ Up to date the germplasm collections of the CGIAR Centres make up the bulk of the crop genetic material placed under the Multilateral System; thereby, the CGIAR Centres have played a crucial role in making the Multilateral System functional.

Close collaboration between the International Treaty and the CGIAR Centres continues also on other levels. Among other things, the

³⁵ FAO (2010), p. 68.

³⁶ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009).

³⁷ Moore and Tymowski (2005), p. 76.

To learn more about the role of the CGIAR Centres in the origins of the International Treaty refer to lesson 3 of this module (History of the International Treaty).

³⁸ International Treaty on Plant Genetic Resources for Food and Agriculture (2001), Article 15.

³⁹ Similar agreements have also been signed with other international institutions holding important collections, such as CATIE, the Mutant Germplasm Repository of the FAO/IAEA Joint Division, the Secretariat of the Pacific Community (SPC), and two of the COGENT centres.





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CGIAR Centres and the Secretariat of the International Treaty mutually invite each other to their meetings, and cooperate in areas such as the development of information technology systems including PGRFA databases and tools for the management of Standard Material Transfer Agreements entered into under the Multilateral System.⁴⁰

Together they also provide legal and technical assistance to facilitate the implementation of the International Treaty in developing countries under the FAO/Bioversity International Joint Programme for Capacity Building (hereafter “Joint Programme”).⁴¹ The Joint Programme assists developing countries in the drafting and implementation of laws and administrative processes, and organizes capacity-building workshops for government officials, politicians, farmers and other stakeholder groups of the International Treaty.

5.3.4. The Commission on Genetic Resources for Food and Agriculture

The International Treaty and the Commission are historically very closely linked. The International Treaty was negotiated in the Commission and the Commission acted as the Interim Committee for the International Treaty until 2006.⁴²

The Commission was originally established as the ‘Commission on Plant Genetic Resources’, in 1983, with the mandate to oversee the International Undertaking on Plant Genetic Resources (hereafter “International Undertaking”). In 1995 the FAO Conference broadened the Commission’s mandate to cover all components of biodiversity of relevance to food and agriculture, including crops, farm animals, aquatic organisms, forest trees, micro-organisms and invertebrates. Accordingly, the Commission was renamed ‘Commission on Genetic Resources for

⁴⁰ The forthcoming Module IV of this series will provide information on the Secretariat’s activities related to information technology systems.

⁴¹ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009).

⁴² To learn more about the role of the Commission in the origins of the International Treaty refer to lesson 3 of this module (History of the International Treaty).



Food and Agriculture'. The main objectives of the Commission are to ensure the conservation and sustainable utilization of genetic resources for food and agriculture, as well as the fair and equitable sharing of benefits derived from their use, for present and future generations.

In 2009, the Governing Body of the International Treaty and the Commission have adopted a joint statement of intent that lays down the main areas of collaboration between the two bodies and their respective Secretariats. The joint statement notably foresees that the Chairs of one body will be invited to participate in sessions of the other body and that they may request to put an item on the agenda of the other body, as appropriate. The Chairs and Bureaus of the two bodies maintain contact in order to promote synergy in the implementation of the programmes of work of the two bodies, and the Bureaus of both bodies

meet jointly to address matters of common interest. Furthermore, the Secretariats of the International Treaty and of the Commission meet regularly to exchange information and to promote coherence in the implementation of their respective programmes of work, and they cooperate in the preparation of documents and meetings for their respective bodies and subsidiary processes.⁴³

5.3.5. The World Intellectual Property Organization

The World Intellectual Property Organization (WIPO) is a specialized agency of the United Nations. It was established by the WIPO Convention in 1967. WIPO is dedicated to developing a balanced and accessible international intellectual property system, which rewards creativity, stimulates innovation and contributes to economic development while safeguarding the public interest.

Box 5.4: The WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore

The WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (WIPO IGC) is an international negotiation forum with the objective of reaching agreement on legal text for the effective protection of traditional knowledge, traditional cultural expressions and genetic resources. It was established by the WIPO General Assembly in October 2000.⁴⁴

In the course of its work related to genetic resources, WIPO IGC has been discussing options for defensive protection of genetic resources which might be of relevance to the International Treaty. The term 'defensive protection', when applied to genetic resources, refers to measures aimed at preventing the acquisition of IPR over genetic resources by parties other than the legitimate holders of these genetic resources.

Possible options for defensive protection put forward by WIPO IGC include databases and information systems on genetic resources. Information technology systems have been developed under the International Treaty which store data of the standard material transfer agreements that providers and recipients of PGRFA from the Multilateral System enter into. These information technology systems could contribute to and would be in line with such options for defensive protection of genetic resources as those under discussion by WIPO IGC.⁴⁵

⁴³ FAO (2009).

⁴⁴ WIPO (2011).

⁴⁵ Secretariat of the WIPO IGC (2010).





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In 2010 FAO and WIPO signed a Memorandum of Understanding to foster the partnership of the two organizations. One of the areas of technical cooperation identified in the Memorandum of Understanding is notably the implementation of the International Treaty.

Collaboration between the Secretariat of the International Treaty and WIPO has specifically been ongoing in the framework of the International Treaty's *Ad Hoc* Third Party Beneficiary Committee. The Arbitration and Mediation Centre of WIPO has actively supported the work of the *Ad Hoc* Third Party Beneficiary Committee on the preparation of the mediation rules for disputes that may arise between a provider and a recipient of PGRFA in relation to the SMTA.⁴⁶

5.3.6. The CBD

The original mandate given by the FAO Conference in 1993 for the negotiation of the International Treaty was to harmonize the International Undertaking on Plant Genetic Resources (hereafter “International Undertaking”) with the CBD. The question of the International Treaty’s connection with the CBD arose during the final stages of its negotiations. At one point, it was suggested that the International Treaty might become a protocol to the CBD. In the end, this approach was rejected and the International Treaty was adopted as a freestanding independent international agreement under Article XIV of the FAO Constitution. One of the main reasons for this approach was that as the International Treaty is essentially an agricultural

⁴⁶ FAO acts as the Third Party Beneficiary under the SMTA to defend the interests of the Governing Body in the Multilateral System. As such, it has the right to request information on Standard Material Transfer Agreements entered into and can, if necessary, initiate dispute settlement procedures regarding rights and obligations of the provider and the recipient of PGRFA in an exchange of genetic material under the SMTA.

The forthcoming module IV of this series will provide detailed information on the SMTA and the Third Party Beneficiary.



agreement, its necessary technical support would best be ensured by locating it in FAO. However, the International Treaty expressly recognizes the importance of maintaining close links with the CBD.⁴⁷

The Secretariats of the International Treaty and the CBD collaborate in several ways. Notably, they ensure mutual participation at the meetings of their respective governing bodies as well as technical meetings. The aim of this mutual representation is to share experiences with the implementation of both conventions, especially in the areas of conservation and sustainable use of crop

diversity and access and benefit-sharing. They also hold discussions at the margins of their respective meetings on possible areas and further steps of cooperation, at the level of their Secretariats and Bureaus.⁴⁸

In order to consolidate their collaboration, especially in the area of capacity building regarding the harmonious implementation of the Multilateral System and the Nagoya Protocol at the national level, the two Secretariats have signed a Memorandum of Cooperation in October 2010 when the Nagoya Protocol was adopted.

Key points to remember:

- The Crop Trust is an essential element of the Funding Strategy of the International Treaty in relation to *ex situ* conservation and availability of PGRFA. It operates under the overall policy guidance of the Governing Body of the International Treaty.
- The Crop Trust and the Governing Body have entered into a relationship agreement which allows the Governing Body to appoint four members of the executive board of the Crop Trust.
- The eleven CGIAR Centres that hold international collections of PGRFA have entered into agreements with the Governing Body in 2006, to make their collections available under the conditions of the Multilateral System.
- The International Treaty was negotiated in the Commission and the Commission acted as the Interim Committee for the International Treaty until 2006.
- In 2009, the Commission and the Governing Body of the International Treaty have adopted a joint statement of intent for the coordination of their respective programmes of work.
- WIPO and FAO have signed a Memorandum of Understanding in 2010 which identifies the implementation of the International Treaty as an area of technical cooperation between the two organizations.
- The importance of maintaining close links with the CBD is expressly recognized in the text of the International Treaty.
- In order to consolidate their collaboration, the Secretariats of the International Treaty and the CBD have signed a Memorandum of Cooperation in October 2010 when the Nagoya Protocol was adopted.

⁴⁷ Moore and Tymowski (2005), p. 11.

To learn more about the role of the CBD in the origins of the International Treaty refer to lesson 3 of this module (History of the International Treaty).

⁴⁸ Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (2009).





5.4. Conclusive Summary

Legal Framework

The realization of the provisions on conservation and on sustainable use of the International Treaty directly contributes to achieving the objectives of the CBD in the area of crop diversity. The Contracting Parties of the International Treaty have agreed to promote the effective implementation of the Global Plan of Action and recognized it as a supporting component of the International Treaty.

The CBD lays down the basic principles for ABS in relation to genetic resources. These principles are further elaborated in the Nagoya Protocol. The Nagoya Protocol acknowledges the fundamental role of the International Treaty, recalling notably its Multilateral System. The genetic material of the food crops and forages that are listed in Annex I of the International Treaty fall under the terms for facilitated exchange of the Multilateral System. For other crop genetic material the terms of access and benefit-sharing of the Nagoya Protocol will apply.

The International Treaty neither bans nor encourages the use of IPR on crop varieties. Generally, while a patent taken out on a new crop variety that includes material from the Multilateral System may trigger the mandatory monetary benefit-sharing requirement, plant breeders' rights under the UPOV Convention would be exempt from this mandatory requirement. However, it all depends on the extent to which these IPR allow for further agricultural research and breeding.

Partnerships

The partnership of the International Treaty with the Crop Trust is laid down in an official relationship agreement which recognizes the Crop Trust as an essential element of the International Treaty's Funding Strategy and places it under the overall policy guidance of the International Treaty.

By including their *ex situ* collections in the Multilateral System, the CGIAR Centres have contributed in a crucial way to make the Multilateral System operational. Cooperation between the International Treaty's Secretariat and the CGIAR Centres is ongoing notably in the areas of capacity building for the effective implementation of the International Treaty and the development of information technology systems.

The Governing Body of the International Treaty and the Commission have adopted a joint statement of intent in order to foster the cooperation between their two respective Governing Bodies and Secretariats.

The Memorandum of Understanding between FAO and WIPO identifies the implementation of the International Treaty as an area of technical cooperation between the two organizations.

The International Treaty and the CBD have signed a formal Memorandum of Cooperation in order to consolidate their collaboration, especially in the area of capacity building regarding the harmonious implementation of the Multilateral System and the Nagoya Protocol at the national level.



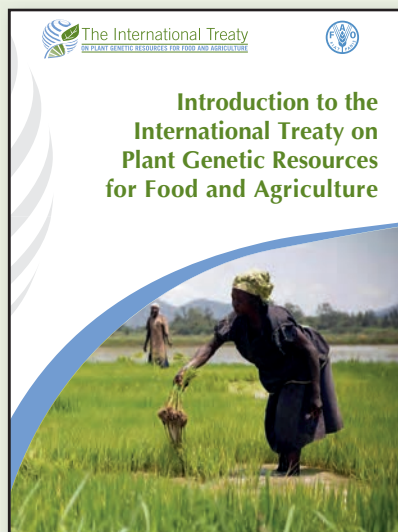
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Module I – Introduction to the International Treaty on Plant Genetic Resources for Food and Agriculture

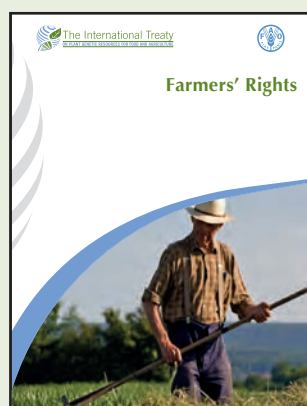
Module I outlines the main components of the International Treaty in the context of current global challenges and the broader legal framework governing crop diversity.

Providing learners with key concepts and historical background, the lessons are especially designed for newcomers to the crop diversity policy area. Module I constitutes a comprehensive introduction to the International Treaty and forms the basis for the lessons of the forthcoming educational modules.

The full series will also comprise the following modules:

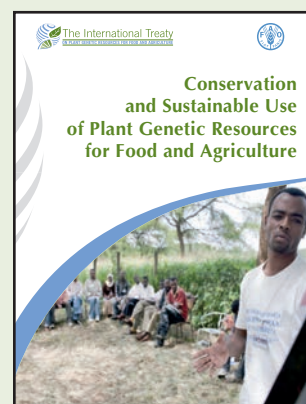
Module II – Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture

This module will elaborate on the measures the International Treaty foresees to promote the conservation and sustainable use of crop diversity and illustrate a number of concrete examples to this end.



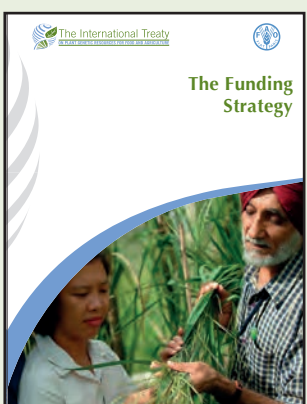
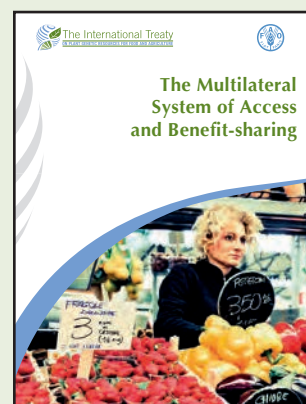
Module III – Farmers' Rights

Module III will present the provisions of the International Treaty that deal with the rights of farmers with regard to crop diversity and provide examples of the realization of Farmers' Rights in different national settings.



Module IV – The Multilateral System of Access and Benefit-sharing

This module will explain the operation of the Multilateral System of Access and Benefit-sharing, with a special focus on the Standard Material Transfer Agreement used in exchanges of genetic material.



Module V – The Funding Strategy

Module V will present the Funding Strategy for the realization of the objectives of the International Treaty, with a focus on the Benefit-sharing Fund which supports activities for the conservation and sustainable use of crop diversity in developing countries.

This module has been supported by the Governments of Switzerland, Italy and Spain. For information on opportunities to contribute to the realization of the forthcoming modules of this series please contact the Secretariat of the International Treaty. Donor recognition in all produced materials will be guaranteed. See contact details on the back of this publication.

“Introduction to the International Treaty on Plant Genetic Resources for Food and Agriculture” is the first in a series of comprehensive educational modules being developed in response to the need voiced by many Contracting Parties and stakeholder groups to strengthen capacities and increase knowledge on the operation and importance of the International Treaty.

The educational modules are aimed at all stakeholder groups of the International Treaty, including policy makers and their staff, civil servants, gene bank staff, plant breeders, farmers’ organizations and other civil society organizations. They are also designed as information and training materials for the use of media, academia, prospective donors and other interested institutions.

This publication is a limited release for stakeholder evaluation. An updated version is foreseen to be published together with the forthcoming modules of the series.

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