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Comparative Study of the Nagoya Protocol, the Plant Treaty and the UPOV Convention: The Interface of Access and Benefit Sharing and Plant Variety Protection

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CISDL Biodiversity and Biosafety Law Research Programme

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Acronyms and Abbreviations

ABS	Access and Benefit-Sharing	MLS	Multilateral system of access and benefit-sharing of the International Treaty on Plant Genetic Resources for Food and Agriculture
ABS-CH	Access and Benefit-Sharing Clearing House		
AHTEG	Ad Hoc Technical Expert Group		
ATK	Traditional knowledge associated with genetic resources	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
CBD	Convention on Biological Diversity		
CGIAR	Consultative Group on International Agricultural Research		
CGRFA	Commission on Genetic Resources for Food and Agriculture	NagO	Ordinance on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization of Switzerland
COP-MOP	Conference of the Parties serving as the meeting of the Parties to the Protocol		
CPVO	European Community Plant Variety Office	NCHA	Federal Act on the Protection of Nature and Cultural Heritage of Switzerland
CPVR Regulation	European Community Regulation 2100/94 on Community plant variety rights	NGOs	Non-governmental organisations
		OFAG	Swiss Federal Office for Agriculture
DNA	Deoxyribonucleic acid	OPD	Ordinance on Direct Payments for Agriculture
DSI	Digital sequence information		
DUS	Distinctiveness, uniformity and stability	PGR	Plant genetic resources
		PGRFA	Plant genetic resources for food and agriculture
EC	European Community		
EDV	Essentially derived varieties	PIC	Prior informed consent
EIT	Economies in transition	Plant Treaty	International Treaty on Plant Genetic Resources for Food and Agriculture
EU	European Union		
FAO	Food and Agriculture Organisation of the United Nations		
		PVP	Plant variety protection
FOEN	Swiss Federal Office for the Environment	PVP Ordinance	Ordinance on the Protection of New Varieties of Plants
FTA	Free trade agreement	R&D	Research and development
GB	Governing Body	TK	Traditional knowledge
GRs	Genetic resources	SMTA	Standard Material Transfer Agreement
IARCs	International agricultural research centres		
		TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
ILCs	Indigenous and local communities		
IP	Intellectual property		
IPI	Swiss Federal Institute of Intellectual Property	UPOV	International Union for the Protection of Plant Varieties
IPR	Intellectual property rights	UPOV Convention	International Convention for the Protection of New Varieties of Plants
IRCC	Internationally recognized certificate of compliance		
IUPGR	International Undertaking on Plant Genetic Resources for Food and Agriculture	WG-EFMLS	Ad Hoc Open Ended Working Group to Enhance the Functioning of the MLS
LDC	Least developed countries	WTO	World Trade Organisation
MAT	Mutually agreed terms		

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I. EXECUTIVE SUMMARY

This study presents the existing situation and recent developments relating to 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* (Nagoya Protocol), the *International Treaty on Plant Genetic Resources for Food and Agriculture* (Plant Treaty) and the *International Convention for the Protection of New Varieties of Plants* (UPOV Convention). Intellectual property rights (IPR) are an instrument for the appropriation or allocation of benefits, and it must be assessed whether plant variety protection (PVP) can be a mode of equitable or fair benefit-sharing given the obligations found in the Nagoya Protocol and Plant Treaty, and how the Nagoya Protocol and Plant Treaty can be implemented in a mutually supportive manner with the UPOV Convention.

The primary aim of the study is to address the linkages between the requirements of the Nagoya Protocol, the requirements of the Plant Treaty, and PVP under the UPOV Convention. To do so, it addresses ongoing processes and current initiatives and measures at the national and international levels relating to the three treaties. Specifically, in order to examine the mutually supportive implementation of these treaties, the study reviews measures to implement obligations under the three treaties in the European Union and Switzerland.

The study concludes with a review of the analysis of linkages between the three treaties, elaborates proposals for ensuring mutual supportiveness in their implementation, and identifies emerging issues that may profoundly influence their functioning such as emerging technologies relating to the use of genetic resources that rely on digital sequence information.

II. INTRODUCTION

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*¹ (Nagoya Protocol), *International Treaty on Plant Genetic Resources for Food and Agriculture*² (Plant Treaty) and *International Convention for the Protection of New Varieties of Plants* (UPOV Convention)³ provide three different international arrangements relating to the use of plant genetic resources. There is a need for a comparative analysis of the different models at the international level, as well as an examination of their practical applications at the national level. There is room to strengthen the mutual supportiveness and compatibility of these agreements, which have very different objectives, approaches and values.

The interactions of the Nagoya Protocol and UPOV Convention have not been well studied, and many studies on the national implementation of UPOV Convention and the Plant Treaty pre-date the entry into force of the Nagoya Protocol. As such, measures enacted after the adoption and entry into force of the Nagoya Protocol have not been studied. Furthermore, ongoing processes under the framework of the three treaties have not been covered by existing studies, including the enhancement of the Plant Treaty's multilateral system, elaboration of the concept of farmers' rights, and the question of digital sequence information (DSI).

In the present study, the implications for an efficient national implementation of the Nagoya Protocol are analysed and evaluated. Given the above, this study aims to do the following:

¹ *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* (2014).

² *International Treaty on Plant Genetic Resources for Food and Agriculture* (2004).

³ *International Convention for the Protection of New Varieties of Plants* (1998).

- a) Identify key linkages and relationships between the Nagoya Protocol, Plant Treaty and the UPOV Convention and provide recommendations for countries for a mutually supportive implementation at the national level;
- b) Analyze the current activities carried out for the enhancement of the Multilateral System (MLS) of the Plant Treaty as well as relevant developments under the Nagoya Protocol and UPOV;
- c) Examine the coexistence of the Nagoya Protocol and UPOV, how they are interlinked, and the possibility for future developments;
- d) Disseminate information on legal frameworks for access and benefit-sharing under the Nagoya Protocol and the Plant Treaty, and how they are linked to plant variety protection (PVP) in the context of the UPOV Convention;
- e) Study and present the lessons learned from existing and proposed measures to implement the access and benefit-sharing provisions of the Nagoya Protocol and Plant Treaty, and PVP in UPOV; and
- f) Share practical experiences gained in successful national implementation of the three international agreements, including an analysis of post-Nagoya measures and access to *in situ* and *ex situ* genetic resources.

The study is divided into six parts. The first part provides an overview of the access and benefit sharing and intellectual property provisions of the Nagoya Protocol. The second will provide an overview of the Plant Treaty's provisions on access and benefit-sharing and intellectual property. The third part will provide an overview of the UPOV Convention's provisions on PVP. The fourth will analyze the interactions between the Nagoya Protocol and UPOV. The fifth part will analyze the interactions between the Plant Treaty and UPOV. The final section will identify trends, challenges and opportunities in the national implementation of the three regimes.

III. OVERVIEW OF THE NAGOYA PROTOCOL'S PROVISIONS ON ACCESS AND BENEFIT-SHARING

Adopted in 2010 as a supplementary agreement to the Convention on Biological Diversity (CBD), the Nagoya Protocol applies to genetic resources (GRs) that are covered by the CBD, and to the benefits arising from their utilization. It also covers traditional knowledge associated with genetic resources (ATK) that are covered by the CBD and the benefits arising from its utilization. As of 28 January 2019, the Nagoya Protocol has 113 Parties and 3 States which have ratified but are not yet a Party.

a. Utilization of Genetic Resources

The Protocol covers GRs when these are “utilized” within the definition of Article 2(c) of the Protocol, meaning “to conduct research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology”. It contains a series of legally binding provisions related to access to GRs,⁴ to the fair and equitable sharing of benefits arising out of utilization,⁵ and compliance with requirements for prior informed consent (PIC) and mutually agreed terms (MAT).⁶ As evidence that GRs have been accessed in accordance with PIC and that MAT have been established, a permit or its equivalent must be granted by provider countries that have established a legal requirement for PIC and

⁴ *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* at Art. 6.

⁵ *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* at Art. 5.

⁶ J. Cabrera Medaglia, F. Perron-Welch, and F.-K. Phillips, *Overview of National and Regional Measures on Access and Benefit Sharing: Challenges and Opportunities in Implementing the Nagoya Protocol*, 3 ed. (Centre for International Sustainable Development Law, 2014).

MAT at the time of access. Once this permit or its equivalent is made available to the Access and Benefit-Sharing Clearing House (ABS-CH), it becomes an “internationally recognized certificate of compliance” (IRCC), which can be used to prove legal access.

b. Indigenous and Local Communities

Parties to the Nagoya Protocol have a set of additional obligations towards indigenous and local communities (ILCs) regarding their rights over ATK and, in certain instances, over GRs held by these communities. These include obligations to take measures to ensure that GRs and ATK held by ILCs are accessed with their PIC or approval and involvement, and that MAT have been established.⁷ In implementing their obligations under the Nagoya Protocol, Parties are further required, in accordance with domestic law, to take into consideration ILCs’ customary laws, community protocols and procedures in respect to ATK and, as far as possible, not to restrict the customary use and exchange of GRs and ATK within and amongst ILCs.⁸

c. Relationship with Other International Instruments and Agreements

In terms of relationship with other international instruments and agreements, the Nagoya Protocol provides that the “Protocol shall be implemented in a mutually supportive manner with other international instruments relevant to this Protocol.”⁹ GRs for food and agriculture have a specific nature that must be considered, and the Plant Treaty addresses the specific features of PGRFA. Furthermore, Article 4 on the Nagoya Protocol’s relationship with international agreements and instruments indicates that “Where a specialized international [ABS] instrument applies that is consistent with, and does not run counter to the objectives of the [CBD and Nagoya Protocol, the Protocol] does not apply for the Party or Parties to the specialized instrument in respect of the specific genetic resource covered by and for the purpose of the specialized instrument.”¹⁰

Although the Nagoya Protocol does not specifically reference the Plant Treaty in Article 4, and no decision of the COP-MOP has been adopted indicating that the Plant Treaty is a specialized instrument, the negotiating history, decision adopting the Nagoya Protocol, and Preamble of the Nagoya Protocol indicate the pertinence of the Plant Treaty and its MLS in interpreting this provision.¹¹ According to the *Vienna Convention on the Law of Treaties*, the negotiating history, agreements relating to the treaty made between all the parties in connexion with the conclusion of the treaty, and the preamble of a treaty are relevant in interpretation.¹² To provide

⁷ *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* at Arts. 6(2), 6(3)(f) and 7.

⁸ *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* at Art. 12.

⁹ *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* at Art. 4(3).

¹⁰ *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* at Art. 4(4).

¹¹ T. Greiber, S. Peña Moreno, M. Åhrén, J. Nieto Carrasco, E. C. Kamau, J. Cabrera Medaglia, M. J. Oliva, F. Perron-Welch, N. Ali, and C. Williams, *An explanatory guide to the Nagoya Protocol on access and benefit-sharing* (IUCN, 2012) pp. 52, 79–81. The Preamble to CBD COP Decision X/1, *Access to genetic resources and the fair and equitable sharing of benefits arising from their utilization*, recognizes that “the International Regime [on ABS] is constituted of the Convention on Biological Diversity, 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, as well as complementary instruments, including the International Treaty on Plant Genetic Resources for Food and Agriculture...”

¹² *Vienna Convention on the Law of Treaties*, 23 May 1969 (in force 27 Jan 1980), 1155 UNTS 331, 8 ILM 679, at Arts. 31(2) and 32.

further guidance, a study has recently been carried out under the aegis of the CBD Secretariat on the criteria to identify a specialized agreement and a possible process for recognition.¹³

d. Links with Intellectual Property Law

As to the links with IPR, the Nagoya Protocol makes reference to IP, where it is indicated that Parties must define clear rules and procedures on the establishment of mutual agreed terms in their administrative, legislative and policy measures including on terms benefit sharing including in relation to IP.¹⁴ The Nagoya Protocol also refers to IP in its Annex, which provides an indicative list of monetary and non-monetary benefits that could include joint ownership of relevant IPR. The other linkage to IP is that patent or IP offices more generally may be designated as a checkpoint in order to implement Article 17 of the Nagoya Protocol on Monitoring the Utilization of Genetic Resources, as has been done in some countries. The designation of patent or IP offices as checkpoints is not an explicit requirement in the Nagoya Protocol since Parties are given the latitude to designate institutions of their choice to act as a checkpoint, provided that they are effective and have functions relevant to the implementation of the requirements set out in Article 17.

For example, in Switzerland, the main checkpoint is the Federal Office for the Environment (FOEN). While the Federal Institute of Intellectual Property (IPI) may also be called a checkpoint in the form identified by Article 17, it is important to note that it has a different function than the one at FOEN. The Patent Act only requires the IPI to receive information related to the source of a GR/ATK. It is not required to assess other ABS requirements such as proof of PIC or MAT. It therefore serves as a measure to enhance transparency on the utilization of GRs through the provision of information by the applicant, rather than a compliance measure that seeks to ensure conformity with the ABS requirements of other Parties to the Nagoya Protocol.

IV. OVERVIEW OF THE PLANT TREATY'S PROVISIONS ON ACCESS AND BENEFIT-SHARING

Adopted in 2001 by the FAO Conference, the Plant Treaty establishes and implements a multilateral international ABS regime for plant genetic resources for food and agriculture (PGRFA) that replaces the non-legally binding 1983 *International Undertaking on Plant Genetic Resources for Food and Agriculture* (IUPGR).¹⁵ The IUPGR aimed 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. It was premised on the principle that “plant genetic resources are a heritage of mankind and consequently should be available without restriction.”¹⁶

¹³ *Study into Criteria to Identify a Specialized International Access and Benefit-Sharing Instrument, and a Possible Process for its Recognition*, UN Doc. UNEP/CBD/SBI/2/INF/17. COP-MOP 3 noted, but did not formally adopt, the criteria proposed in the study. The issue will be reconsidered at COP-MOP 4. For further details, see Nagoya Protocol COP-MOP Decision 3/14 *Specialized International Access and Benefit Sharing Instruments in the Context of Article 4, Paragraph 4, of the Nagoya Protocol*, UN Doc. UNEP/CBD/NP-MOP/DEC/3/14.

¹⁴ *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* at Art. 6.3(g)(iii).

¹⁵ J. Cabrera Medaglia, M. W. Tvedt, F. Perron-Welch, A. Jørem, and F.-K. Phillips, *The Interface between the Nagoya Protocol on ABS and the ITPGRFA at the International Level: Potential Issues for Consideration in Supporting Mutually Supportive Implementation at the National Level* (Fridjof Nansen Institute, 2013); C. Chiarolla, S. Louafi, and M. Schloen, ‘An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers’ Rights’ *The 2010 Nagoya Protocol on Access and Benefit-sharing in Perspective: Implications for International Law and Implementation Challenges*, (Leiden, NL: Martinus Nijhoff, 2013) pp. 89–90.

¹⁶ ‘International Undertaking on Plant Genetic Resources for Food and Agriculture’ (1983) at Art. 1; C. Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity* (Edward Elgar, 2011) pp. 8–9.

Given that the CBD firmly established national sovereignty over GRs, but also the common concern of humankind in the conservation of biodiversity, Resolution 3 accompanying the Nairobi Final Act adopting the CBD urged the exploration of ways and means to develop complementarity and cooperation between the CBD and the Global System for the Conservation and Sustainable Use of PGRFA (made up of the Commission on Genetic Resources for Food and Agriculture (CGRFA), the IUPGR, and the International Network of Ex Situ Collections under the Auspices of FAO).¹⁷ This spurred the negotiation of the Plant Treaty under the aegis of the CGRFA, which was adopted by the FAO in 2001. The Plant Treaty moved away from the common heritage principle to the common concern principle, with States agreeing that the conservation of PGRFA is a common concern of humankind due to global interdependence on PGRFA.¹⁸ The principle of common concern in the context of GR attempts to strike a balance between “national sovereignty [and] the duties and responsibilities that derive from its exercise, pursuant to the global importance [of] biodiversity and PGRFA.”¹⁹

The Plant Treaty provides a framework for the conservation and sustainable use of crop diversity, and the fair and equitable sharing of benefits, in harmony with the CBD and, by extension, the Nagoya Protocol.²⁰ Its provisions reflect a compromise between national sovereignty and global interdependence on PGRFA by preserving some elements of the open access regime that existed under the IUPGR through a multilateral system on ABS (MLS).²¹ In its Preamble, the Parties recognize that the Plant Treaty and other relevant agreements “should be mutually supportive with a view to sustainable agriculture and food security.” As of 28 January 2019, the Plant Treaty has 145 Parties.

a. Access under the Multilateral System

In the Plant Treaty, Parties agreed to establish a MLS that is “efficient, effective, and transparent, both to facilitate access to [PGRFA], and to share, in a fair and equitable way, the benefits arising from the utilization of these resources, on a complementary and mutually reinforcing basis.”²² The MLS consists of a pool of selected PGRFA included in Annex I to the Plant Treaty that are available through a facilitated access mechanism when access is requested for the purpose of utilization and conservation for research, breeding and training for food and agriculture.²³ The MLS is suited to the needs of agriculture and plant breeding, aiming to reduce transaction costs by eliminating the need for ad hoc negotiations between users and providers of GR.²⁴ The common rules for access to PGRFA in the MLS are codified in a Standard Material Transfer

¹⁷ *Nairobi Final Act of the Conference for the Adoption of the Agreed Text of the Convention on Biological Diversity*, Resolution 3: The Interrelationship Between the Convention on Biological Diversity and the Promotion of Sustainable Agriculture; Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity*, p. 7.

¹⁸ Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity*, p. 11.

¹⁹ Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity*, p. 11.

²⁰ Chiarolla, Louafi, and Schloen, ‘An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers’ Rights’, p. 93.

²¹ Chiarolla, Louafi, and Schloen, ‘An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers’ Rights’, p. 91.

²² *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 10(2).

²³ Chiarolla, Louafi, and Schloen, ‘An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers’ Rights’, p. 94.

²⁴ Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity*, p. 12.

Agreement (SMTA) adopted by the Governing Body (GB) of the Plant Treaty.²⁵ If users intend to use PGRFA for other purposes, they are subject to the ABS regime established by the CBD and Nagoya Protocol.²⁶

The MLS is composed of two primary sources. First, it includes collections of PGRFA in Annex I that are under the management and control of Parties and in the public domain.²⁷ The MLS also includes PGRFA held in the *ex situ* collections of the international agricultural research centres (IARCs) of the Consultative Group on International Agricultural Research (CGIAR) centers where they have signed agreements with the GB.²⁸ Parties have also committed to encourage other holders of PGRFA found in Annex I to include their collections in the MLS.²⁹ However, non-Annex I material held in trust by the IARCs is only available for access on terms consistent with those terms mutually agreed between the IARCs that receive the material and the country of origin of such resources, or the country that has acquired those resources in accordance with the CBD or other applicable law after the coming into force of the Plant Treaty.³⁰ Yet, many non-Annex I materials held by CGIAR centers are still transferred using the SMTA,³¹ as their agreements with the GB cover both Annex I and non-Annex I materials.

b. Benefit-Sharing under the Multilateral System

The Parties to the Plant Treaty note that facilitated access to PGRFA in the MLS constitutes a major benefit of the MLS, but also that benefits accruing therefrom must be shared fairly and equitably.³² In practice, the MLS works as a common pooling, distributing and benefit-sharing system for the PGRFA that it covers. As noted above, access to such resources is facilitated in the sense that those who want to access the genetic material in the system do not need to negotiate access agreements on a case-by-case basis with national authorities or other public providers. Instead, the resources are available to anyone who wants to use them under a standard contract, i.e. the SMTA.

The use of the SMTA removes all the costs involved in the bilateral process for the benefit of farmers and gene bank managers who typically provide the genetic material, and for the plant breeders and researchers who typically seek access to this material to improve it. GRs accessed through the MLS can only be used for the purpose of conservation or for research, breeding, and training activities related to food and agriculture; the use of GRs for “chemical, pharmaceutical and/or other non-food/feed industrial uses” is not permitted under the Plant Treaty and the SMTA.³³

According to the Treaty, one condition governing access to the MLS is that available passport data and, subject to applicable law, any other associated available non-confidential descriptive information, shall be made available with the PGRFA provided.³⁴ Furthermore, recipients of GRs agree under the SMTA not to claim any IP protection on the GRs, or any parts thereof, in the form received through the MLS. If the recipient of the genetic material intends to conserve the resource, they must also agree to make it available to other Parties

²⁵ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 12(4).

²⁶ Chiarolla, Louafi, and Schloen, ‘An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers’ Rights’, p. 94. Article 12(3)(a) of the Plant Treaty notes that access is granted “provided that such purpose does not include chemical, pharmaceutical and/or other non-food/feed industrial uses.”

²⁷ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 11(2).

²⁸ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Arts. 11(5), 15(1).

²⁹ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 11(3). E. Tsioumani, ‘Beyond access and benefit-sharing: Lessons from the law and governance of agricultural biodiversity’ (2018) 21 *The Journal of World Intellectual Property* 106–22 at 112.

³⁰ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 15(3).

³¹ Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity*, p. 128.

³² *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 13(1).

³³ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 12(3)(a).

³⁴ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 12(3)(c).

upon request. The MLS, though having similar ABS objectives, differs from the bilateral approach to the exchange of genetic resources foreseen in the CBD and the Nagoya Protocol.

The benefits mentioned in the Plant Treaty are mainly non-monetary, such as the exchange of information, access to and transfer of technology, and capacity-building, but also include the sharing of monetary and other benefits arising from commercialization. This is subject to the taking into account of priority activity areas in the rolling Global Plan of Action, under the guidance of the GB.³⁵ Although interest is often oriented to the question of monetary benefits, the results of plant breeding can include important public goods such as rural development and poverty alleviation, environmental protection, food security and cultural diversity. These public goods may be more significant than the potential monetary benefits that can be generated through the MLS.³⁶

Distribution of monetary benefits is carried out through the Benefit-Sharing Fund (BSF) in a project-based approach. The Fund is mandated to prioritize projects that support not only the conservation and sustainable use of agricultural biodiversity, but also the livelihoods of farmers, especially in least developed countries (LDC) and economies in transition (EIT). According to the Plant Treaty text, benefits should flow primarily, directly and indirectly, to farmers, particularly farmers in developing countries who still conserve and sustainably utilize PGRFA in their fields.³⁷

Although the Plant Treaty has established a sophisticated system to operationalize benefit-sharing at the inter-state level, and a complex web of technical requirements for PGRFA exchange, it has not largely succeeded in legally enforcing monetary benefit-sharing by users.³⁸ Payments to the MLS are not compulsory if the varieties are freely available for further breeding and other research, as is, in principle depending on the specific legal regime, the case where varieties are protected by PVP.³⁹ The MLS has, however, facilitated the exchange of hundreds of thousands of PGRFA, mainly to enable public agricultural research, and provided valuable capacity-building support for utilization of PGRFA.⁴⁰

Given the obstacles to ensuring monetary benefit-sharing under the existing system, the GB established an intersessional process in 2013 aiming to enhance the functioning of the MLS. At its fifth session, in September 2013, the GB decided to take action to address the fact that the MLS was not functioning at the level hoped for by the Parties. To this end, in 2013 the GB created the Ad Hoc Open Ended Working Group to Enhance the Functioning of the MLS (WG-EFMLS) with the mandate to develop a range of optional measures to: “a) Increase user-based payments and contributions to the Benefit-sharing Fund in a sustainable and predictable long-term manner, and (b) Enhance the functioning of the [MLS] by additional measures.”⁴¹

During the 7th session of the GB, the mandate of the WG-EFMLS was extended, and it was further requested to: “(1) develop a proposal for a Growth Plan to attain the enhanced Multilateral System, (2) revise the Standard Material Transfer Agreement, based on its report to the Seventh Session of the Governing Body, (3)

³⁵ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 13(2).

³⁶ Chiarolla, Louafi, and Schloen, ‘An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers’ Rights’, p. 96.

³⁷ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Arts. 13(3) and 18(5); Tsioumani, ‘Beyond access and benefit-sharing: Lessons from the law and governance of agricultural biodiversity’, 114.

³⁸ Florian Rabitz, ‘Access without benefit-sharing: Design, effectiveness and reform of the FAO Seed Treaty’ (2017) 11(2) *International Journal of the Commons* 621–640.

³⁹ *Proceedings of the Symposium on Possible Interrelations between the International Treaty on Plant Genetic Resources for Food and Agriculture and the International Convention for the Protection of New Varieties of Plants*, October 26, 2016, FAO Doc. IT/GB-7/17/Inf.14 at p. 39.

⁴⁰ Tsioumani, ‘Beyond access and benefit-sharing: Lessons from the law and governance of agricultural biodiversity’, 116-7.

⁴¹ *Implementation of the Funding Strategy of the International Treaty*, Resolution 2/2013, FAO Doc. IT/GB-5/13/Report, Appendix A at p. 8.

elaborate criteria and options for possible adaptation of the coverage of the Multilateral System, (4) make recommendations to the Governing Body on any other relevant issues, and (5) continue to liaise closely with the Ad Hoc Advisory Committee on the Funding Strategy and Resource Mobilization.”⁴²

The WG-EFMLS has held 8 meetings to date (from 2014 to 2018). During these meetings the focus has been, amongst others, to elaborate a full revised draft revised SMTA with particular emphasis on the development of a subscription system for PGRFA, and on elaborating options for adapting the coverage of the MLS based on different scenarios and income projections. The Working Group is continuing its work and will hold its ninth meeting in the first half of 2019.

c. Farmers’ Rights

The Plant Treaty recognizes Farmers’ Rights through its Article 9. This provision recognizes the enormous contribution of ILC and farmers worldwide, particularly those in the centers of origin and crop diversity, have made, and will continue to make, to the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world.⁴³ It gives governments the responsibility for implementing Farmers’ Rights, and lists specific measures that could be taken to protect, promote and realize these rights:

- The protection of traditional knowledge relevant to PGRFA;⁴⁴
- The right to equitably participate in sharing benefits arising from the utilization of PGRFA;⁴⁵
- The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA;⁴⁶ and,
- The right to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate.⁴⁷

These measures “constitute a bundle of rights [that] [S]tates can confer upon [farmers] to preserve and promote their traditional practices, knowledge and innovation that help [to conserve and develop] crop diversity.”⁴⁸

However, the nature of farmers' rights is not made entirely clear in the text of the Plant Treaty. As defined, farmers' rights raise questions, such as: 1) what is their nature and scope?; 2) what is their relationship with IPR?; 3) what are their limitations?; and, 4) to what extent can they deliver on expectations?⁴⁹ Given the framework nature of the Treaty, Parties’ implementation of its provisions through domestic legislation and policies are where details of their nature and content will be elaborated.⁵⁰ In 2017, the GB decided to establish an Ad Hoc Technical Expert Group (AHTEG) on Farmers’ Rights and mandated it to “produce an inventory of national measures that may be adopted, best practices and lessons learned from the realization of Farmers’

⁴² *Measures to Enhance the Functioning of the Multilateral System of Access and Benefit-Sharing*, FAO Doc. IT/GB-7/17/Res2, para. 4.

⁴³ FAO Resolution 5/89, 29 November 1989, para. 3, cited in Chiarolla, Louafi, and Schloen, ‘An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers’ Rights’, p. 99; *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 9(1).

⁴⁴ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 9(2)(a).

⁴⁵ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 9(2)(b).

⁴⁶ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 9(2)(c).

⁴⁷ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 9(3).

⁴⁸ Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity*, p. 22.

⁴⁹ C Oguamanam, ‘Intellectual Property Rights in Plant Genetic Resources: Farmers’ Rights and Food Security of Indigenous and Local Communities’ (2006) 11 *Drake Journal of Agricultural Law* 273–305 at 285.

⁵⁰ Oguamanam, ‘Intellectual Property Rights in Plant Genetic Resources: Farmers’ Rights and Food Security of Indigenous and Local Communities’, 287.

Rights” and, based on this inventory, “develop options for encouraging, guiding and promoting the realization of Farmers’ Rights as set out in Article 9.”⁵¹ The AHTEG is to report back to the GB on its work so that it may be considered at the Eighth Session of the GB in 2019.⁵²

The AHTEG is the first, formal intersessional process on Farmers’ Rights since the entry into force of the Plant Treaty almost 15 years ago. The expert group held its first meeting in September 2018, where the nominated experts considered possible structures for the inventory based on a proposals made by members, and agreed that the inventory would only focus on measures and practices that had been or are in the process of being implemented.⁵³

V. OVERVIEW OF THE UPOV CONVENTION’S PROVISIONS ON PLANT VARIETY PROTECTION

The *International Convention for the Protection of New Varieties of Plants* (UPOV Convention) was first signed in Paris in 1961, and revised in 1972, 1978, and 1991. The latest revision (the 1991 Act) entered into force in 1998. The purpose of the UPOV Convention is to secure the rights of breeders as specific stakeholders in plant breeding and, by extension, agriculture and horticulture. Plant variety protection (PVP), also known as plant breeders’ rights, is a *sui generis* form of IP specifically adapted to the process of plant breeding. By securing the rights of breeders, this special rights regime is expected to serve as incentive for breeders to develop new varieties of plants in support of innovation in agricultural production. Under the 1991 Act, the right extends to “seven acts in respect to propagating material of a variety that requires the breeder’s authorization: (1) production or reproduction (multiplication); (2) conditioning for the purpose of propagation; (3) offering for sale; (4) selling or other marketing; (5) exporting; (6) importing; and (7) stocking for any of the purposes mentioned in (1) through (6).”⁵⁴ As of 28 January 2018, there were 75 UPOV Members.

The UPOV Convention owes its origin to Europe, where some countries had adopted PVP regimes at the national level prior to 1961.⁵⁵ Membership has since extended to most industrialized countries, which tend to have a well-developed plant breeding sector. Most of the countries which constituted the earliest membership of the UPOV were in the global north. However, following the coming into force of the Trade-Related Aspects of Intellectual Property (TRIPS) Agreement⁵⁶ in 1995, proponents of UPOV have capitalized on the TRIPS Agreement to expand membership to include countries in the global south.⁵⁷ However, in the global south, the science of plant breeding is not quite as developed as in the global north, and there is a greater reliance by farmers on seed saving for propagation, sale and communal exchange.⁵⁸ In these countries, farming and plant breeding are often overlapping and non-demarcated practices.⁵⁹

⁵¹ *Implementation of Article 9, Farmers’ Rights*, Resolution 7/2017, FAO Doc. IT/GB07/17/Res7, at p. 4.

⁵² *Implementation of Article 9, Farmers’ Rights* at p. 4.

⁵³ *First Meeting of the Ad Hoc Technical Expert Group on Farmers’ Rights*, FAO Doc. IT/GB-8/AHTEG-FR-1/18/Report, para. 15.

⁵⁴ F. M. Abbott, T. Cottier, and F. Gurry, *International Intellectual Property in an Integrated World Economy*, 3 ed. (Wolters Kluwer, 2015) p. 746.

⁵⁵ E.g. the 1953 German Law on the Protection of Varieties and the Seeds of Cultivated Plants. See J. Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention* (Cambridge University Press, 2017) p. 49; G. Dutfield, ‘Turning Plant Varieties into Intellectual Property: The UPOV Convention? The Future Control of Food: A Guide to International Negotiations and Rules on Intellectual Property, Biodiversity and Food Security, (London, UK: Earthscan, 2008) pp. 27–47.

⁵⁶ *Agreement on Trade-Related Aspects of Intellectual Property Rights* (1994).

⁵⁷ Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention*, p. 52.

⁵⁸ G. Dutfield, *Intellectual Property Rights, Trade and Biodiversity* (Earthscan, 2000) p. 29.

⁵⁹ C. Oguamanam, ‘Breeding Apples for Oranges: Africa’s Misplaced Priority Over Plant Breeders’ Rights’ (2015) 18 *Journal of World Intellectual Property* 165–95; C. Lawson, ‘The breeder’s exemption under UPOV 1991, the Convention on Biological Diversity and its Nagoya Protocol’ (2015) 10 *Journal of Intellectual Property Law & Practice* 526–35 at 527.

TRIPS is one of the constitutive agreements of the World Trade Organisation (WTO) and “represents the furthest reach of multilateral harmonization efforts”⁶⁰ in IP law. TRIPS allows for the exclusion from patentability of products (plants and animals) and processes (essentially biological processes for the production of plants or animals),⁶¹ but all members of the WTO must now provide for the “...protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof...”⁶²

As the only ready-made *sui generis* model for the protection of plant varieties, the UPOV remains a favoured option for TRIPS compliance.⁶³ In practice, the flexibility for countries to devise their own *sui generis* schemes found in the TRIPS Agreement has not been broadly used, as there was “no assistance given to countries as to what an ‘effective *sui generis* system’ might be.”⁶⁴ Rather, many countries, especially the countries of the global south, have adopted the UPOV regime, making it an important global standard for plant IP.⁶⁵ In some cases, the adoption of the UPOV Convention was mandated in WTO accession negotiations. In other cases, it was done in response to the requirements of bilateral or regional free trade agreements (FTA)⁶⁶ or subtle pressures transmitted through economic partnership agreements.⁶⁷

However, there are PVP regimes that are not based on the UPOV Convention, as TRIPS allows countries to “design their own [PVP] system as long as it is considered to be effective.”⁶⁸ Those systems have been developed with greater sensitivity and consideration for the rights of farmers and of ILC, and their use of traditional ecological knowledge in agricultural production. That is the approach adopted in Ethiopia,⁶⁹ India,⁷⁰ Malaysia,⁷¹ and Thailand.⁷² In principle, the national laws in these States transcend the narrow concept of PVP and aim to cater to other public interests such as the conservation of biodiversity, and food security and sovereignty, by attempting to balance the interests of commercial breeders and smallholder farmers and traditional knowledge practitioners.⁷³ By developing their own *sui generis* systems outside the UPOV Convention, these countries place weight on the need to establish PVP in balance with their obligations in the

⁶⁰ Abbott, Cottier, and Gurry, *International Intellectual Property in an Integrated World Economy*, p. 4.

⁶¹ Dutfield, *Intellectual Property Rights, Trade and Biodiversity*, p. 21; *Agreement on Trade-Related Aspects of Intellectual Property Rights* at Art. 27(3)(b).

⁶² *Agreement on Trade-Related Aspects of Intellectual Property Rights* at Art. 27(3)(b).

⁶³ Tsioumani, ‘Beyond access and benefit-sharing: Lessons from the law and governance of agricultural biodiversity’, 109; Chiarolla, Louafi, and Schloen, ‘An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers’ Rights’, p. 93; Dutfield, ‘Turning Plant Varieties into Intellectual Property: The UPOV Convention’, p. 40.

⁶⁴ Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention*, p. 53.

⁶⁵ Lawson, ‘The breeder’s exemption under UPOV 1991, the Convention on Biological Diversity and its Nagoya Protocol’, 527.

⁶⁶ D. Baker, A. Jayadev, and J. Stiglitz, ‘Innovation, Intellectual Property, and Development: A Better Set of Approaches for the 21st Century’ (2017) p. 43; P. Roffe, ‘Bringing Minimum Global Intellectual Property Standards into Agriculture: The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)’ in *The Future Control of Food: A Guide to International Negotiations and Rules on Intellectual Property, Biodiversity and Food Security* (Earthscan, 2008) p. 61; C. Correa, S. Shashikant, and F. Meienburg, *Plant Variety Protection in Developing Countries: A Tool for Designing a Sui Generis Plant Variety Protection System: An Alternative to UPOV 1991* (APBREBES, 2015) pp. 40–41; Chiarolla, *Intellectual Property, Agriculture and Global Food Security: The Privatization of Crop Diversity*, p. 193.

⁶⁷ Oguamanam, ‘Breeding Apples for Oranges: Africa’s Misplaced Priority Over Plant Breeders’ Rights’; Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention*, pp. 53–57.

⁶⁸ Dutfield, *Intellectual Property Rights, Trade and Biodiversity*, p. 78.

⁶⁹ Ethiopia, *Plant Breeders’ Right Proclamation No. 481/2006*.

⁷⁰ India, *Protection of Plant Varieties and Farmers’ Rights Act, 2001*.

⁷¹ Malaysia, *Protection of New Plant Varieties Act 2004*.

⁷² Thailand, *Plant Variety Protection Act 1999*.

⁷³ Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention*, p. 46.

Plant Treaty, CBD and Nagoya Protocol.⁷⁴ Yet, they remain under pressure to join the UPOV, in which case they would be required to recalibrate their laws to become UPOV compliant.⁷⁵

Although the UPOV Convention is focused on the protection of breeders, one of the likely effects of PVP is the facilitation of innovation in breeding. This may include research and development that could increase diversity in plant variety, an outcome that is supportive of the overarching objectives underlying the CBD and associated instruments, including the Nagoya Protocol. A public interest oriented understanding of the potential and actual contributions of plant breeding is one that reconciles PVP with the underlying objectives of the Plant Treaty and the CBD.

a. Plant Breeders Rights

The UPOV Convention provides two alternative sets of rules for the protection of PVP, one established in 1978 and a second, stricter version in 1991.⁷⁶ Most of the Parties to UPOV have implemented the 1991 Act of the UPOV Convention.⁷⁷ After the 1991 revisions came into force, it was the only version open to subsequent accessions. But in exercise of their option not to transition to the 1991 amendments, a minority of Members still follow the 1978 Act of the UPOV Convention.⁷⁸ These are mainly “net importers of plant varieties (including seed) [that] prefer to allow their farmers wider use (e.g. replanting) of seeds that have already been purchased, and a shorter duration of protection.”⁷⁹ Virtually all UPOV Parties follow the rules found in one of these two revisions.⁸⁰

The 1991 revision to the UPOV Convention tightened the exemptions that allowed for use of protected variety by farmers and researchers in ways that strengthened PVP and brought it closer in line with conventional utility patent protection.⁸¹ Unlike the UPOV 1978, where a plant species protected by PVP is not eligible for patent protection, under the 1991 revisions it is possible to protect eligible plant species by both PVP as well as patents.⁸² UPOV members can choose to provide PVP and exclude patents, may permit both forms of protection while requiring a breeder to choose between the two, or can provide both forms of protection concurrently.⁸³

In addition, under the 1991 revisions, the scope of PVP extends beyond propagating material to include essentially derived varieties (EDV), and harvested material and products derived from the harvested material in certain circumstances.⁸⁴ EDV are varieties that virtually retain the entire phenotype of the parent variety.

⁷⁴ *Proceedings of the Symposium on Possible Interrelations between the International Treaty on Plant Genetic Resources for Food and Agriculture and the International Convention for the Protection of New Varieties of Plants*, p. 50.

⁷⁵ See C. Oguamanam, ‘Plant Breeders’ Rights, Farmers’ Rights and Food Security: Africa’s Failure of Resolve and India’s Wobbly Leadership’ (forthcoming, 2019) *Indian Journal of Law and Technology*.

⁷⁶ D. Baker, A. Jayadev, and J. Stiglitz, ‘Innovation, Intellectual Property, and Development: A Better Set of Approaches for the 21st Century’ (2017) p. 42.

⁷⁷ M. D. Janis, H. H. Jarvis, and R. C. Peet, *Intellectual property law of plants* (Oxford University Press, 2014) para. 1.11.

⁷⁸ Janis, Jarvis, and Peet, *Intellectual property law of plants*, para. 1.11.

⁷⁹ Abbott, Cottier, and Gurry, *International Intellectual Property in an Integrated World Economy*, p. 747.

⁸⁰ Janis, Jarvis, and Peet, *Intellectual property law of plants*, para. 3.02. On 13 April 2018, only one Party (Belgium) was bound by the 1961 Convention as amended by the Additional Act of 1972, 17 States were bound by the 1978 Act, and 55 States and 2 organizations (EU and ARIPO) are bound by the 1991 Act, see “Status in Relation to the International Union for the Protection of New Varieties of Plants (UPOV)”, online: <http://www.upov.int/export/sites/upov/members/en/pdf/status.pdf>.

⁸¹ Oguamanam, ‘Intellectual Property Rights in Plant Genetic Resources: Farmers’ Rights and Food Security of Indigenous and Local Communities’, 280. Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention*, pp. 51–52. Sanderson at p. 51-52.

⁸² Janis, Jarvis, and Peet, *Intellectual property law of plants*, para. 3.08.; see also Oguamanam, *Breeding Apples and Oranges*, at p. 173

⁸³ Janis, Jarvis, and Peet, *Intellectual property law of plants*, para. 3.21.

⁸⁴ Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention*, p. 52.

They are protected as a strategy to discourage what has been dubbed “copycat” or “cosmetic” breeding,⁸⁵ a practice that produces competing varieties without violating the breeder’s rights, even though the varieties do not contain any improvements from the dependent or protected patent variety.⁸⁶

UPOV 1991 introduces a broad definition of variety, which is relevant to the concept of PVP and the interrelationship between the UPOV Convention and the Nagoya Protocol and Plant Treaty. According to the definition, a variety is: “a plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a breeder’s right are fully met, can be: defined by the expression of the characteristics resulting from a given genotype or combination of genotypes; distinguished from any other plant grouping by the expression of at least one of the said characteristics; and, considered as a unit with regard to its suitability for being propagated unchanged.”⁸⁷ This definition makes clear that neither a single plant, nor a trait, nor a chemical (e.g. DNA) corresponds to a variety; the definition refers to a phenotype rather than a genotype by referencing the “expression of characteristics”.⁸⁸

The main distinctions between PVP and patent protection over plants are that each relies on different criteria for protection and the extension of the rights granted, and they address two different subjects: plant varieties and inventions. The main functional differences are that patent law requires that the inventor disclose the details of the invention in a public repository in a language and composition such that anyone knowledgeable in the art can replicate the invention. In the case of utility patents on plants, this includes the obligation to deposit samples of propagating material or similar in a publicly available depository (e.g. International Depository Authorities). The claimed invention must also be non-obvious and demonstrate an inventive step.⁸⁹ With narrow exceptions, the ensuing exclusive right of the patentee is protected for twenty years for the most part before the information goes into the public domain.

PVP is a little more flexible, as plant varieties must instead have the following four features: novelty, distinctiveness, uniformity, and stability (DUS).⁹⁰ Perhaps, more importantly, PVP allows for both a breeders and a research exemption. The exemptions are the essence of PVP, as they create a regime designed to both protect new varieties while facilitating breeders’ access and use of varieties to develop new ones.⁹¹ They are the main distinction between PVP and patents, as such exemptions are in principle antithetical to the idea of patent.⁹² Patents “generally [exclude] another person from using the invention without the consent of the patent holder even if the other person independently found the same invention.”⁹³

Farmers’ varieties typically can neither satisfy the UPOV nor the patent eligibility criteria for protection. The UPOV’s PVP system is not suited to the diverse contextual variables associated with farmers’ dealings with plant genetic resources. Farmers’ varieties are not easily amenable to claims to novelty and as they are rarely uniform.⁹⁴ They result from ongoing transgenerational process of knowledge dealing and knowledge creation in agricultural contexts. At best, they are heterogeneous in their essence and many are not uniform. In that

⁸⁵ See C. Lawson, ‘Plant Breeders and Essentially Derived Varieties: Still Searching for Workable Solutions’ (2016) 32 *European Intellectual Property Review* 499

⁸⁶ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.08.

⁸⁷ *International Convention for the Protection of New Varieties of Plants* at Art. 1(vi).

⁸⁸ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.18.

⁸⁹ Janis, Jervis, and Peet, *Intellectual property law of plants*, p. 3.23.

⁹⁰ *International Convention for the Protection of New Varieties of Plants* at Arts. 5-9.

⁹¹ Oguamanam, ‘Breeding Apples for Oranges: Africa’s Misplaced Priority Over Plant Breeders’ Rights’, 172.

⁹² Oguamanam, ‘Breeding Apples for Oranges: Africa’s Misplaced Priority Over Plant Breeders’ Rights’, 172.

⁹³ Abbott, Cottier, and Gurry, *International Intellectual Property in an Integrated World Economy*, p. 9.

⁹⁴ Tsoumani, ‘Beyond access and benefit-sharing: Lessons from the law and governance of agricultural biodiversity’, 109.

sense, they may be considered as part of the ‘common knowledge’ or an ‘existing variety’ for the purpose of assessing the distinctness of subsequent varieties if they are in a publicly accessible plant collection.⁹⁵

b. Benefits of Protection

The UPOV Convention is a specialized IP system and was developed before the adoption of the CBD, Nagoya Protocol or the Plant Treaty. As such, it was not developed with benefit-sharing in mind and it contains no explicit benefit-sharing provisions.⁹⁶ However, as a form of IP, theoretically PVP benefits society as a whole by promoting innovation and spurring investment in plant breeding programs that result in improved varieties that produce higher yields.⁹⁷ The farmer’s privilege and the breeder’s privilege could also be conceived of as a form of benefit-sharing.

This view is supported by the stated mission of UPOV, to “provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society.”⁹⁸ It is argued that “[b]y influencing the development and use of new plant varieties, the UPOV Convention is ... a key aspect of a global push to promote food security, reduce climate change and enhance economic development.”⁹⁹ Benefits from new plant varieties could include higher yield, pest and disease resistance, stress tolerance, greater input efficiency, improved harvestability and crop quality, and improved access to national and international markets.¹⁰⁰ The benefits are first provided to farmers as new and improved varieties, which then deliver benefits to consumers and society as a whole.¹⁰¹ Specific results include the “reduced cost of high quality food, efficient land use, improved storage quality and diversity of plant derived products.”¹⁰²

While all the claimed benefits of PVP may not apply in even measure in different contexts, the advantages of PVP can be associated with the positive logic of IP, which is to promote innovation for the benefit of society. Yet, the premise that strong IP protection is needed to spur innovation is not a universally shared proposition.¹⁰³ In the context of agriculture, increased innovation may not necessarily translate into improved access to food. With the public interest in innovation in mind, the purpose of IPR is to promote artificial control or scarcity (a monopoly) in order to reward the inventor for their innovation.¹⁰⁴ When applied to food

⁹⁵ Janis, Jervis, and Peet, *Intellectual property law of plants*, paras 3.18, 3.38.

⁹⁶ J. Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention* (Cambridge University Press, 2017) at p. 265, citing *UPOV Reply of 23 January 2009, to the Letter of the Executive Secretary of the Secretariat of the Convention on Biological Diversity (CBD) of 19 December 2008*.

⁹⁷ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 1.06.

⁹⁸ J. Cabrera Medaglia, ‘The Relationship Between the Access and Benefit Sharing International Regime and Other International Instruments: The World Trade Organization and the International Union for the Protection of New Varieties of Plants’ (2010) 10 *Sustainable Development Law and Policy* 24–53; Chiarolla, Louafi, and Schloen, ‘An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers’ Rights’, p. 91.

⁹⁹ J. Sanderson, ‘Why UPOV is relevant, transparent and looking to the future: a conversation with Peter Button’ (2013) 8 *Journal of Intellectual Property Law & Practice* 615–23 at 615.

¹⁰⁰ Sanderson, ‘Why UPOV is relevant, transparent and looking to the future: a conversation with Peter Button’, 620.

¹⁰¹ Sanderson, ‘Why UPOV is relevant, transparent and looking to the future: a conversation with Peter Button’, 621.

¹⁰² Sanderson, ‘Why UPOV is relevant, transparent and looking to the future: a conversation with Peter Button’, 621.

¹⁰³ Baker, Jayadev, and Stiglitz, ‘Innovation, Intellectual Property, and Development: A Better Set of Approaches for the 21st Century’; Tsioumani, ‘Beyond access and benefit-sharing: Lessons from the law and governance of agricultural biodiversity’, 116–17; Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 1.30.

¹⁰⁴ Laurence Boy, « L’évolution de la réglementation internationale : Vers une remise en cause des semences paysannes ou du privilège de l’agriculteur » (2008) XXII (3) *Revue internationale de droit économique* 293-313, pp 294-295.

crops, this could disrupt food security, as IPR allow higher than competitive prices to be charged to consumers.¹⁰⁵

The notion of ‘benefit’ is not conceived of in the same way in the UPOV as it is in the Nagoya Protocol and Plant Treaty regimes, and this must be borne in mind when speaking of ‘benefit-sharing.’ Whether the ‘benefits’ resulting from PVP are ‘fair and equitable’ is not evident. At best, the concept of ‘benefits’ flowing from PVP designates a broader construction of the notion of benefits as conceived of in the IP context. The benefits of IP apply to society as a whole, as opposed to the contextual or localized concerns for benefit-sharing in the CBD, Nagoya Protocol and the Plant Treaty. In the biodiversity regime, concerns over benefit-sharing focus on ILCs and other marginal actors in the production of GRs and knowledge around PVP relevant to food, agriculture, conservation, and overall environmental sustainability. It is imperative that the regimes be reconciled at the level of national or regional applications as a matter of policy making in order to realize their positive individual contributions along with their collectively shared objectives.

c. Exemptions to Plant Variety Protection

The scope of PVP is limited by explicit exceptions, only some of which are compulsory under the UPOV Convention. The first compulsory exemption is for acts done privately and for non-commercial purposes.¹⁰⁶ The second is for acts done for experimental purposes.¹⁰⁷ The third is the breeder’s exemption, which applies to acts done for the purpose of breeding other varieties, and allows the use of propagating material of protected varieties without prior authorization.¹⁰⁸ It is intended to optimize variety improvement by ensuring that germplasm sources remain accessible to all breeders, and is considered one of the cornerstones of the PVP system.¹⁰⁹ This is, in a way, a deviation from an underlying principle of IP, as it allows anyone – even competitors – to commercially use a product protected by IP to create a rival product.¹¹⁰ However, it exists due to “the importance of access to genetic resources for sustainable and substantial progress in plant breeding.”¹¹¹ Yet, it must be observed that this window is only open to breeders as a community, and researchers where they have no commercial intent resulting from the use of the protected variety.

There is no question that the breeders’ exemption is consistent with the overarching objectives of the UPOV Convention, which is to protect plant breeders and advance the practice of plant breeding while also guaranteeing its profitability. The breeder’s exemption does not guarantee that material protected by PVP will be accessible to the public. There is no requirement that plant material be deposited in a publicly accessible depository, which downstream breeders would need to access to breed new varieties. Furthermore, procuring the commercially released variety may not facilitate downstream breeding (e.g. where the variety is a hybrid and downstream breeders do not have access to parental lines).¹¹² On the other hand, it is argued that the exemption may have become too generous to downstream breeders in view of advancements in plant breeding

¹⁰⁵ In order to address this, in 2014, the Special Rapporteur on the Right to Food called for changes to PVP laws including the support and facilitation of local seed exchanges. See O De Schutter, *Final Report: The Transformative Potential of the Right to Food*, UN Doc. HRC/A/25/57/2014; T Braunschweig et al, *Onning seeds, accessing food: A human rights impact assessment of UPOV 1991 based on case studies in Kenya, Peru and the Philippines* (Berne Declaration, 2014); Abbott, Cottier, and Gurry, *International Intellectual Property in an Integrated World Economy*, p. 9.

¹⁰⁶ *International Convention for the Protection of New Varieties of Plants* at Art. 15(1)(i).

¹⁰⁷ *International Convention for the Protection of New Varieties of Plants* at Art. 15(1)(ii).

¹⁰⁸ *International Convention for the Protection of New Varieties of Plants* at Art. 15(1)(iii).

¹⁰⁹ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.72.

¹¹⁰ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.72.

¹¹¹ Sanderson, ‘Why UPOV is relevant, transparent and looking to the future: a conversation with Peter Button’, 619.

¹¹² Janis, Jervis, and Peet, *Intellectual property law of plants*, paras 3.72, 3.73.

that allow much faster development of competing varieties (e.g. marker-assisted selection, genetic engineering).¹¹³

Perhaps one way to ensure the optimal impact of breeders' exemption as a potential avenue for improved consideration of ABS and uptake of innovation in agricultural production is to extend that exemption to farmers. For many ILC, farming and breeding are a fused and inseparable experience. Farmers are important partners for the translation of innovation in agriculture in ways that support not only biodiversity conservation but also enhance the idea of benefit-sharing. After all, traditional and local community farmers' immemorial stewardship of the global pool of GRs remains the foundation of modern plant breeding and other forms of high-tech agricultural innovations.

Under the 1978 revisions to the UPOV Convention, Parties could, in principle, extend to farmers the opportunity to use or exchange farm-saved seeds of protected variety on specified terms (the so-called 'farmer's privilege').¹¹⁴ The idea of the farmer's privilege seeks to safeguard the common practice of farmers' saving their own seed for the purpose of re-sowing, and to ensure Parties can adopt solutions that are specifically adapted to their agricultural circumstances. The 1991 UPOV revision clearly established the optional right to recognize the farmer's privilege in national laws, subject to the rights of breeders.¹¹⁵ Specifically, it requires that the privilege be regulated "within reasonable limits and subject to safeguarding of the legitimate interests of the breeder."¹¹⁶

The UPOV Secretariat asserts that the record of the Diplomatic Conference where the 1991 Act was adopted indicates that the farmer's privilege was only targeted at crops where there was a common practice of farmers saving harvested material for further propagation and where the product of the harvest is used for further propagation - namely small-grained cereals but not fruits, vegetables and ornamentals.¹¹⁷ The Secretariat promotes a multifactor approach for determining compliance with the limiting clause, including the following: the type of variety (hybrids or synthetic varieties should not be included); the size of the holding/crop area/crop value (the exemption should target smaller operators); the proportion or amount of the harvested crop (a maximum could be established); and changing situations, such as new farming practices and new PVP regimes.¹¹⁸ Lastly, farmers that save seed may also be legally obliged to pay the owner of the PVP as a way to ensure the safeguarding of the legitimate interests of the breeder.¹¹⁹ This is the case in the European Union, as described in the case study below.

A final exemption of relevance is the compulsory license provision, which authorizes Parties to restrict the free exercise of PVP for reasons of the public interest so long as measures are taken to ensure that the breeder

¹¹³ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.74.

¹¹⁴ Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention*; Oguamanam, 'Breeding Apples for Oranges: Africa's Misplaced Priority Over Plant Breeders' Rights', 173.

¹¹⁵ Chiarolla, Louafi, and Schloen, 'An Analysis of the Relationship between the Nagoya Protocol and Instruments related to Genetic Resources for Food and Agriculture and Farmers' Rights', p. 92; Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.76.

¹¹⁶ *International Convention for the Protection of New Varieties of Plants* at Art. 15(2).

¹¹⁷ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.77. UPOV 1991 contains the following statement on the matter: "The Diplomatic Conference recommends that the provisions laid down in Article 15(2) of the International Convention for the Protection of New Varieties of Plants... should not be read so as to be intended to open the possibility of extending the practice commonly called 'farmer's privilege' to sectors of agricultural or horticultural production in which such a privilege is not a common practice on the territory of the Contracting Party concerned."

¹¹⁸ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.78; 'Explanatory Notes on Exemptions to the Breeder's Right under the 1991 Act of the UPOV Convention' (2009) paras 19–22.

¹¹⁹ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.79; 'Explanatory Notes on Exemptions to the Breeder's Right under the 1991 Act of the UPOV Convention', para. 23.

receives equitable remuneration if a compulsory license is granted.¹²⁰ The European Union has adopted detailed rules on this particular matter, which are addressed below.

VI. INTERACTIONS BETWEEN THE NAGOYA PROTOCOL AND UPOV

GRs are the core subject matter of the Nagoya Protocol. Plant varieties are the main form of genetic resource at the heart of UPOV. Both instruments focus on the same subject matter with different language and varying degrees of emphasis that are reconcilable. During the negotiations leading to the Nagoya Protocol, the UPOV Secretariat highlighted the importance of continued access to GRs to ensure progress in plant breeding and “thereby to maximize the use of genetic resources for the benefit of society”,¹²¹ indicating that the various exemptions are an “inherent benefit-sharing principle.”¹²² The UPOV Council also expressed its concern over benefit-sharing measures that could introduce barriers to progress in breeding.¹²³

Given that the Nagoya Protocol is concerned with accountability in regard to the use of GRs, conceivably some its prescriptions or terms for accessing GRs, including but not limited to PIC and MAT, the disclosure of origin, and technology transfer measures, have ramifications for plant breeders and by extension PVP under the UPOV. A transparent and accountable process for accessing GRs for various uses, including for plant breeding, is a sustainable way to boost the plant breeding endeavour. It recognizes other critical actors in the conservation and sustainable use of GRs, including ILC. A balanced and purposeful approach to the overarching objectives of both the UPOV and the Nagoya Protocol can reconcile the tension that exist between PVP and the farmer’s privilege. A fair access and equitable benefits sharing system for the utilization of GRs is an enabling and conducive framework for the plant breeding endeavour and innovation that accommodates the contribution of indigenous and local community farmers and other practitioners of traditional ecological knowledge as vital stakeholders in conservation of biodiversity and innovation around plant varieties for food and agriculture

a. Breeders’ Exemption

As discussed above, the UPOV breeder’s exemption allows breeders to use protected plants for breeding purposes. However, under the Nagoya Protocol the utilization of GRs, including for breeding purposes, are subject to established conditions with on ABS. This raises the question of whether in the exercise of their exemption pursuant to UPOV, breeders must comply with the Nagoya Protocol where it is applicable. In some ways, the breeders’ exemption is synonymous with the research exemption, and falls within the meaning of utilization under the Nagoya Protocol when modern biotechnology is applied in the breeding process.¹²⁴ As indicated above, a purposeful reading of the UPOV and the Nagoya Protocol gives a sense of mutual reinforcement of their overarching objectives in complementary ways.

A legal academic, Charles Lawson, has broached the issue. He argues that the UPOV and Nagoya Protocol are compatible when interpreted using the principles of the Vienna Convention on the Law of Treaties. He

¹²⁰ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 3.81; *International Convention for the Protection of New Varieties of Plants* at Art. 17.

¹²¹ UPOV, *Access to Genetic Resources and Benefit-Sharing: Reply of UPOV to the Notification of June 26, 2003, from the Executive Secretary of the Convention on Biological Diversity (CBD)*, adopted by the 37th Session of the UPOV Council, 23 October 2003, para 17.

¹²² *Access to Genetic Resources and Benefit-Sharing: Reply of UPOV to the Notification of June 26, 2003, from the Executive Secretary of the Convention on Biological Diversity (CBD)*, para. 17.

¹²³ Tsioumani, ‘Beyond access and benefit-sharing: Lessons from the law and governance of agricultural biodiversity’, 115.

¹²⁴ Article 2 of the Protocol defines utilization as genetic resources to mean the “conduct of research and development on the genetic and/or biochemical composition of genetic resources, including through the application of biotechnology as defined in Article 2 of the Convention”.

notes that both the CBD and Nagoya Protocol “make express provision for other international agreements dealing with access [to] and benefit-[from] the ‘genetic resources’ within the scope of the CBD and Nagoya Protocol”¹²⁵ and that “they do not affect the rights and obligations of any existing international agreement, such as UPOV 1991, ‘except where the exercise of those rights and obligations would cause a serious damage or threat to biological diversity’.”¹²⁶ As the rights and obligations found in UPOV do not directly overlap with those in the Nagoya Protocol, and are not likely to result in a serious harm or threat to biodiversity, the Nagoya Protocol and UPOV 1991 are likely compatible at the level of international law.¹²⁷ However, where a country is a party to both the UPOV and Nagoya Protocol application of breeders’ exemption should ideally not result in an outcome that undermines or compromises the rights of other critical actors such as farmers and holders of relevant traditional knowledge, whose contributions are vital to the conservation of biodiversity in general but more so in the context of PGRFA.

Potential conflict between the two regimes arises at the national level. PVP can be granted over GRs covered under the Nagoya Protocol. However, other layers of dealings with the protected variety can be subject to additional obligations imposed on States and private actors through ABS contracts.¹²⁸ It would be important to ensure that any additional obligations that may arise in specific national contexts do not have the effect of undermining plant breeding or considerations for equitable ABS with regard to, not only plant breeding, but also other incidental or associated forms of utilization of GRs.

Most States that have implemented ABS measures have not directly addressed the question of PVP when defining rules on PIC and MAT.¹²⁹ Therefore, the extent to which ABS measures accommodate PVP exemptions is an important subject for domestic lawmaking which takes into consideration the need for mutual harmonization of the overall objectives of the UPOV and the Nagoya Protocol. The subject of the breeders’ or research exemption is an important site for policy and regulatory interest in domestic implementation of ABS. Otherwise, it will be left to providers and users to decide the form or content of the PVP rights and exemptions that they will impose on the accessed GRs.¹³⁰

Another linkage in relation to implementation could be that national ABS measures could include an obligation that breeders using a protected variety for the development of a new one obtain access permits as per the requirements set out in the Nagoya Protocol. This could occur even if the genes used are not collected in the wild but are part of a commercial variety. It would be worthwhile for Parties to consider Article 8(c) of the Nagoya Protocol when implementing such a measure, which requires Parties to “[c]onsider the importance of genetic resources for food and agriculture and their special role for food security.”

b. Monitoring the Utilization of Genetic Resources

A potential disclosure requirement for compliance with PIC and MAT could be the PVP application. PVP offices can be designated as check points under Article 17 of the Nagoya Protocol. In fact this is the case in some countries like Ecuador. In communication to the CBD in 2003, the UPOV Council indicated that UPOV

¹²⁵ Lawson, ‘The breeder’s exemption under UPOV 1991, the Convention on Biological Diversity and its Nagoya Protocol’, 531; *Convention on Biological Diversity* (1992) at Art. 22; *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* at Art. 4(2).

¹²⁶ Lawson, ‘The breeder’s exemption under UPOV 1991, the Convention on Biological Diversity and its Nagoya Protocol’, 533; *Convention on Biological Diversity* at Art. 22; *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* at Art. 4(1).

¹²⁷ Lawson, ‘The breeder’s exemption under UPOV 1991, the Convention on Biological Diversity and its Nagoya Protocol’, 534.

¹²⁸ Lawson, ‘The breeder’s exemption under UPOV 1991, the Convention on Biological Diversity and its Nagoya Protocol’, 534.

¹²⁹ See Cabrera Medaglia, Perron-Welch, and Phillips, *Overview of National and Regional Measures on Access and Benefit Sharing: Challenges and Opportunities in Implementing the Nagoya Protocol* for an analysis of country level ABS measures.

¹³⁰ Lawson, ‘The breeder’s exemption under UPOV 1991, the Convention on Biological Diversity and its Nagoya Protocol’, 535.

Members encourage information on the origin of the plant material used in the breeding of the variety to be provided where this facilitates the examination mentioned above, but that compliance with ABS requirements (PIC and MAT) cannot not be an additional condition of protection by PVP, as this would violate the UPOV Convention.¹³¹ Yet, some authors argue that despite this, a disclosure of origin requirement does not necessarily contravene the UPOV rules as “UPOV did not directly address the issue of entitlement to apply for such rights, but rather treated such requirements as an additional condition for protection.”¹³² That being said, a country can decide to include a requirement for the disclosure of countries of origin or geographical origin of genetic resources in its national measures as a way to fulfill other policy objectives linked to monitoring the utilization of genetic resources rather than as a condition for PVP.

c. Technology Transfer

During the negotiation of the Nagoya Protocol, it was noted that the technology transfer provisions could be relevant to PVP.¹³³ The final language on technology transfer is contained in the article on technology transfer, collaboration and cooperation. It states that:

In accordance with Articles 15, 16, 18 and 19 of the CBD, the Parties shall collaborate and cooperate in technical and scientific [R&D], including biotechnological research activities, as a means to achieve the objective of this Protocol. The Parties undertake to promote and encourage access to technology by, and transfer of technology to, developing country Parties, in particular the [LDC] and small island developing States among them, and [EIT], in order to enable the development and strengthening of a sound and viable technological and scientific base for the attainment of the objectives of the [CBD and Nagoya Protocol]. Where possible and appropriate such collaborative activities shall take place in and with a Party or the Parties providing [GRs] that is the country or are the countries of origin of such resources or a Party or Parties that have acquired the [GRs] in accordance with the [CBD].¹³⁴

With regard to UPOV, the essence of breeders’ exemption is, among other considerations, to promote and enhance plant breeding research and development. Although the text above aims to facilitate technology transfer, benefit sharing provisions including technology transfer could also be included in MAT established for accessing GRs for breeding purposes. The reference above to technology transfer and the global north-south technological asymmetry correlates, in a way, to the dichotomy in the UPOV Convention between breeders and farmers. The idea of technology transfer opens up an important opportunity to close the gap between breeders and farmers, which is a critical fault line in the UPOV Convention. The overarching objectives of both the Nagoya Protocol and the UPOV, and the interests of all relevant stakeholders, are advanced through technology transfer between breeders and farmers in the UPOV framework. While the Nagoya Protocol approach to technology transfer takes a global or regional perspective, the relevance of technology transfer in the UPOV takes on a more internal perspective as a potential strategy to enhance

¹³¹ *Access to Genetic Resources and Benefit-Sharing: Reply of UPOV to the Notification of June 26, 2003, from the Executive Secretary of the Convention on Biological Diversity (CBD)*, para. 8.

¹³² Joshua Sarnoff & Carlos Correa, *Analysis of Options for Implementing Disclosure of Origin Requirements in Intellectual Property Applications – A contribution to UNCTAD’s response to the invitation of the Seventh Conference of the Parties of the Convention on Biological Diversity*, UN Doc. UNCTAD/DITC/TED/2004/14, cited in Cabrera Medaglia J, *The Political Economy of the International ABS Regime Negotiations: Options and Synergies with Relevant IPR Instruments and Processes*, ICTSD Programme on Natural Resources, Natural Resources, International Trade and Sustainable Development, Issue Paper No. 2 (ICTSD, 2010), p. 13.

¹³³ Cabrera Medaglia, ‘The Relationship Between the Access and Benefit Sharing International Regime and Other International Instruments: The World Trade Organization and the International Union for the Protection of New Varieties of Plants’.

¹³⁴ *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* at Art. 23.

collaboration between breeders and farmers. It is an approach capable of mitigating the dichotomy between breeders and farmers in the UPOV Convention.

VII. INTERACTIONS BETWEEN THE PLANT TREATY AND UPOV

Both the International Treaty and the UPOV are concerned with PGRFA. PGRFA are the building blocks for crop improvement, and are thus a key resource for the global agriculture and food production. Both the UPOV Convention and the Plant Treaty have important implications for global agriculture, food production and food security. Even though their respective emphasis and approach differ, it is important that they be implemented in a mutually supportiveness and complementary manner that takes into consideration their common interest in the use of PGRFA for the benefit of the society.

The UPOV is focused on securing and optimizing the interest of plant breeders in the plant breeder enterprise with a view to enhancing plant varieties and global food security. The Plant Treaty is concerned with the “conservation and sustainable use of plant genetic resources for food and agriculture and their fair and equitable sharing of the benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security.”¹³⁵

As evident by its title, the scope of the Plant Treaty is limited to PGRFA rather than addressing all plant GRs (PGR).¹³⁶ Furthermore, its MLS applies only to specific crops and forages, namely “the [PGRFA] listed in Annex 1, established according to criteria for food security and interdependence.”¹³⁷ In contrast, the UPOV Convention applies to all botanical genera and species, not just PGRFA. In its implementation, Parties commit to adopting all measures necessary for the progressive application of its provisions to the largest possible number of botanical genera and species.¹³⁸ Most Parties to the UPOV Convention have therefore applied its provisions to all plant genera and species.¹³⁹ Therefore, the Plant Treaty only covers a small fraction of the plant genetic resources covered by the UPOV Convention.

In a way, even though the emphases of the UPOV and Plant Treaty differ in terms of objective and scope of coverage, they are not mutually exclusive with regard to the uses of PGR to which they may apply. Indeed, in a national context, the dichotomy between the jurisdictions of the two instruments may not be feasible, as the PGRFA addressed may overlap under a single national regime. As such, a thoughtful and detailed policy for a domestic implementation of both instruments requires a melding of the objectives in a mutually supportive fashion. For example, whether as annexed forages or crops or non-annexed botanical genera or species, national implementation would have the objective of ensuring that PVP is secured to support and not undermine the sustainable use of PGRFA. Such rights must be tailored with sensitivity to fair and equitable sharing of ensuing benefits from the utilization of plant genetic resources for breeding or other uses pursuant to the ultimate objective of promoting enhanced plant variety diversity, sustainability, food security and a recognition of international interdependence on PGRFA.

a. Sustainable Use of PGRFA

The Plant Treaty requires Parties to develop and maintain policy and legal measures that promote the sustainable use of PGRFA.¹⁴⁰ In this context, sustainable use could include promoting “plant breeding efforts

¹³⁵ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 1(1).

¹³⁶ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 3.

¹³⁷ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 11(1).

¹³⁸ *International Convention for the Protection of New Varieties of Plants* at Art. 3.

¹³⁹ ‘List of the Taxa Protected by Members of the Union’, 51st Ordinary Session of the UPOV Council, 26 October 2017, UPOV Doc. C/51/6. The Parties are Brazil, China, Jordan, Macedonia, Oman, Turkey, Trinidad and Tobago, Uzbekistan and South Africa.

¹⁴⁰ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 6(1).

which, with the participation of farmers, particularly in developing countries, strengthen the capacity to develop varieties particularly adapted to social, economic and ecological conditions, including in marginal areas”¹⁴¹ Similarly, even though the UPOV is silent on the subject of sustainable use of PGRFA, the essence of PVP under the UPOV is to advance the rights of breeders in support of the breeding endeavor, which should ultimately enhance the diversity of plant varieties useful for agriculture, innovation and food security. Despite concerns over the focus of commercial plant breeding and associated R&D on a few economically important crops,¹⁴² such reservations do not detract from the role of plant breeding science as instrumental to developing new plant varieties in pursuit of sustainability.

b. Intellectual Property Rights

The Plant Treaty adopts a pragmatic approach to IPR by recognizing their relevance as an incentive to support innovation as well as research and development in PGRFA. Yet, it bars claims for IPR or any other rights that limit facilitated access to the PGRFA, or their genetic parts or components, on material in the form received from the MLS.¹⁴³ However, if a modification is made to the material from the form received, it is possible to apply for protection such as PVP.

In contrast to the balanced or open access model of IP adopted by the Plant Treaty, the UPOV Convention’s focus is less flexible. As noted above, it is limited to a specific regime of IP, namely PVP, with a focus on plant breeders. Under the UPOV Convention, plant breeders are framed as core beneficiaries of PVP. Quite unlike the deliberate attempt under the Plant Treaty to draw in farmers as beneficiaries of IP protection in PGRFA, the UPOV has a limited window for the discretionary accommodation of the interest of farmers. Any such accommodation, for example with regard to the use of farm-saved seeds of breeders’ protected varieties, must be devoid of commercial application. And, in any case, it must be subject to the breeders’ interests.

The Plant Treaty provides that access to PGRFA under development, including those being developed by farmers, remains at the discretion of developer at the time of development.¹⁴⁴ It also provides that access to PGRFA protected by intellectual and other property rights must be consistent with relevant treaties and relevant national laws.¹⁴⁵ These and similar provisions raise the need to harmonize at national levels the intellectual property approach and orientation of both instruments in ways that could advance the mutual supportiveness of their overarching objectives.

c. Farmers’ Rights

The Plant Treaty and UPOV Convention have a different orientation with regard to farmers and their role as stakeholders in the use of PGRFA, food security and agricultural production. In accordance with objectives around ABS and sustainable agriculture and food security, the Plant Treaty identifies with farmers’ contribution in the realization of those objectives, and makes a case for recognition of those contribution under the title of farmers’ rights. As indicated above, while not defining those rights, the Plant Treaty identifies features of those rights. They include rights to: traditional knowledge relevant to PGRFA; participate in decision making in matters related to conservation and sustainable use of PGRFA; and to use, save, exchange

¹⁴¹ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 6(2)(c).

¹⁴² C. Oguamanam, ‘Agro-Biodiversity and Food Security: Biotechnology and Traditional Agricultural Practices at the Periphery of International Intellectual Property Regime Complex’ (2007) *Michigan State Law Review* 215–55.

¹⁴³ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 12.3(d).

¹⁴⁴ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 12.3(e).

¹⁴⁵ *International Treaty on Plant Genetic Resources for Food and Agriculture* at Art. 12.3(f).

farm-saved seed/propagating materials.¹⁴⁶ These provisions are perhaps the most concrete or strongest expression of farmers' rights yet, building on previous non-binding initiatives.¹⁴⁷ Even though the concept has yet to be fully developed in jurisprudence, it creates a sense of counterbalance to the extension of IP in the agricultural arena.¹⁴⁸

As indicated above, the 1991 UPOV revision expands the rights of breeders over farmer's privileges which, simply stated, are reduced to use of farm-saved seeds of the breeder protected varieties in the farmer's fields for non-commercial purposes. Even then such privileges are not only within the discretion of national law, they must also not be exercised in a manner that compromises the interest of breeder, which is considered sacrosanct.

Interestingly, not only does the Plant Treaty elaborate on farmers' rights, with emphasis on the use of the word "right" in association with farmers as stakeholder in PGRFA, conceivably it also saved the accommodation granted to farmers under the UPOV. Specifically, in Article 9.3, it provides "Nothing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material subject to national law as appropriate." The extent of the interaction of this provision of the Plant Treaty with the UPOV Convention's provision is open to interpretation for a country willing to implement farmers' rights as a member of both the UPOV and the Plant Treaty. First, the language of UPOV does not use farmers' rights. Assuming that is not an issue, UPOV's recognition of farmer's privilege is largely limiting or constraining of farmers' rights in the way it is construed by the Plant Treaty.

The extent of application of farmer's privilege or rights, however called, pursuant to both the UPOV and the Plant Treaty is a matter at the discretion of national governments that seek to implement the instruments. Given the synergy between CBD, the Plant Treaty and the Nagoya Protocol, and their shared objectives in ABS and in the conservation and sustainable use of PGRFA, sustainable agriculture and in food security, not to mention in the traditional knowledge of ILC, national implementation of both UPOV and the Plant Treaty could have a stronger and more positive approach toward farmers' rights. The above-mentioned instruments constitute part of the regime complex for farmers' rights.¹⁴⁹ They elaborate emerging norms, rules or principles which designate expectations of parties where they converge,¹⁵⁰ of farmers' rights and similar concepts, in this case, States that seek to implement the UPOV and Plant Treaty with specific regard to farmers' rights.

This foregoing exposes as it problematizes the UPOV's marginal approach to farmers as critical actors in PGRFA. This conundrum justifies the following observation: "It is less surprising as it is logical for plant breeders and stakeholders in agricultural biotechnology to perceive farmers as free riders who ought to be controlled and reined in through regulatory containment and even [through] the intellectual property system [in general]. But if consideration is given to the fact that ILC farmers have been immemorial curators or

¹⁴⁶ *International Treaty on Plant Genetic Resources for Food and Agriculture* Arts. 9.2(a), (b), (c), 9.3.

¹⁴⁷ 'International Undertaking on Plant Genetic Resources for Food and Agriculture'.

¹⁴⁸ Oguamanam, 'Intellectual Property Rights in Plant Genetic Resources: Farmers' Rights and Food Security of Indigenous and Local Communities'.

¹⁴⁹ An emerging part of the regime complex is the new *United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas*, which was adopted by the UN General Assembly on 17 December 2018 (UN Doc. A/RES/73/165). For more details, on the process leading up to the Declaration, Vitor Ido and Viviana Munoz Tellez, *Towards the Adoption of a UN Declaration on the Rights of Peasants and Other People Working in Rural Areas* (South Centre, 2018).

¹⁵⁰ See Stephen D. Krasner (ed) *International Regimes* (Cornell University Press, 1983); see also Oguamanam, 'Agro-Biodiversity and Food Security: Biotechnology and Traditional Agricultural Practices at the Periphery of International Intellectual Property Regime Complex'; Laurence R. Helfer, 'Regime Shifting: The TRIPS Agreement and New Dynamics of International Intellectual Property Law Making' (2004) 29(1) *Yale Law Journal* 1-83.

custodians of the world's vast genetic heritage and diversity upon which later-day formal plant breeder and hi-tech agricultural R&D thrive, the notion of farmers as free riders becomes a contested charge".¹⁵¹

There is sufficient room to use national discretion in the implementation of UPOV and Plant Treaty to ensure a more progressive approach to farmers' rights that reconciles the UPOV to the overarching objectives of the Plant Treaty and similar instruments in the regime complex in which farmers' rights are implicated.

VIII. TRENDS, CHALLENGES AND OPPORTUNITIES IN IMPLEMENTATION OF THE THREE TREATIES

European Union

Nagoya Protocol

The European Union (EU) ABS Regulation,¹⁵² based on Article 192 of the Treaty on the Functioning of the European Union, transposes the international rules contained in the Nagoya Protocol which govern user compliance with the rules on ABS established by the countries providing GRs. It also provides for the adoption of some additional measures by the European Commission through implementing act(s). The Commission subsequently adopted Implementing Regulation (EU) 2015/1866 on the register of collections, monitoring user compliance and best practices.¹⁵³ Both the EU ABS Regulation and the Implementing Regulation are directly applicable in all Member States of the EU.¹⁵⁴

The EU ABS Regulation does not contain rules concerning access measures. Member States are left to determine how they will implement the Nagoya Protocol's provisions on access to GRs and ATK, as the Protocol does not oblige Parties to regulate access to their GRs and/or ATK.¹⁵⁵ Member States are free to establish access measures if they deem it appropriate but, if established, they need to comply with other relevant EU law (e.g. internal market rules).¹⁵⁶

The EU ABS Regulation relies on a concept of centralized regulation and de-centralized enforcement. The main premise is the duty to exercise due diligence to ascertain that GRs and ATK are accessed in accordance with applicable ABS legislation in the provider country.¹⁵⁷ The scope of the regulation covers GRs over which countries exercise sovereign rights and where ABS measures have been established by a Party to the Protocol, with those measures applying to the specific genetic resource or ATK in question.¹⁵⁸ In cases where GRs are obtained indirectly, through an intermediary such as a culture collection or other specialised companies or organisations with a similar function, the user should ensure that PIC was obtained and MAT were established

¹⁵¹ C Oguamanam, 'Africa's Failure of Resolve and India's Wobbly Leadership'.

¹⁵² *Regulation (EU) No 511/2014 of the European Parliament and of the Council of 16 April 2014 on compliance measures for users from the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization in the Union*, OJ L 150, 20.5.2014, p. 59–71. ["EU ABS Regulation"]

¹⁵³ *Commission Implementing Regulation (EU) 2015/1866 of 13 October 2015 laying down detailed rules for the implementation of Regulation (EU) No 511/2014 of the European Parliament and of the Council as regards the register of collections, monitoring user compliance and best practices*, OJ L 275, 20.10.2015, p. 4–19 ["Implementing Regulation"]; Commission Notice, "Guidance document on the scope of application and core obligations of Regulation (EU) No 511/2014 of the European Parliament and of the Council on the compliance measures for users from the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation in the Union", 2016/C 313/01 at 313/02. ["Commission Guidance Document"]

¹⁵⁴ Commission Guidance Document at 313/03.

¹⁵⁵ Commission Guidance Document at 313/02.

¹⁵⁶ Commission Guidance Document at 313/3.

¹⁵⁷ C Godt, 'The Multi-Level Implementation of the Nagoya Protocol in the European Union' in *Implementing the Nagoya Protocol: Comparing Access and Benefit-Sharing Regimes in Europe* at p. 309 and 313

¹⁵⁸ Commission Guidance Document at 313/4.

by the intermediary when the resources were originally accessed. Due diligence is presumed in cases where GRs are obtained from a certified collection (discussed in greater detail below). The temporal scope of the Regulation is from 12 October 2014 onward, the date when the Nagoya Protocol entered into force for the EU. GRs accessed prior to that date fall outside the scope of the Regulation even if utilisation of those resources occurs after 12 October 2014.¹⁵⁹

Writ large, the EU ABS Regulation does not apply to GRs for which ABS is governed by a specialised international instrument (e.g. the Plant Treaty). However, it does apply if they are accessed in a country that is not a Party to those agreements but is a Party to the Nagoya Protocol, or where resources covered by such specialised instruments are utilised for purposes other than those of the instrument in question.¹⁶⁰

Although the EU ABS Regulation does not apply to commodities, if and when R&D is carried out on GRs which originally entered the EU as commodities, the intended use has changed and such new use falls within its scope. If there is a change of intent, the user must contact the provider country and clarify whether PIC and MAT requirements apply to this utilisation and, if yes, obtain the necessary permits and establish MAT.¹⁶¹ R&D on derivatives (whether or not containing functional units of heredity) is within the scope where they are derived from GRs accessed under the Protocol, covered by the required PIC related to GRs from which they were derived, and addressed in MAT.¹⁶²

In order to be in the scope of the EU ABS Regulation, ATK needs to be related to the utilisation of GRs and it must be covered by the relevant contractual agreements, as described in the definition of ATK: “traditional knowledge held by an indigenous or local community that is relevant for utilisation of the [GRs] and that is as such described in the [MAT] applying to the utilisation of [GRs].”¹⁶³

The due diligence obligations stemming from the EU ABS Regulation apply to all users of GRs falling within the scope of the Regulation, defined as “any natural or legal person that utilises [GRs] or [ATK].”¹⁶⁴ This is independent of their size or of the intent of the use (commercial or non-commercial), meaning that it applies to individuals, including researchers, and to organisations such as universities or other research organisations, as well as to small and medium sized enterprises and multinational companies, so long as the conditions above are met.¹⁶⁵ However, the obligations only apply to users that utilise GRs or ATK within EU territory; products resulting from R&D that takes place outside of the EU are not covered.¹⁶⁶

The core obligation on users under the EU ABS Regulation is to exercise due diligence to ascertain that the GRs which they utilise have been accessed in accordance with the applicable ABS legislation or regulatory requirements of the provider countries of these GRs, and that benefits are fairly and equitably shared upon MAT, in accordance with any applicable legislation or regulatory requirements.¹⁶⁷ If the genetic resource was not accessed in accordance with applicable access rules, the user is required to obtain an access permit or its equivalent and establish MAT, or discontinue utilisation.¹⁶⁸ To demonstrate compliance with the obligation, the EU ABS Regulation requires users to seek, keep and transfer to subsequent users certain information,

¹⁵⁹ Commission Guidance Document at 313/5.

¹⁶⁰ Commission Guidance Document at 313/6.

¹⁶¹ Commission Guidance Document at 313/7.

¹⁶² Commission Guidance Document at 313/9.

¹⁶³ Commission Guidance Document at 313/7.

¹⁶⁴ EU ABS Regulation at Art. 3(4).

¹⁶⁵ Commission Guidance Document at 313/10.

¹⁶⁶ Commission Guidance Document at 313/10.

¹⁶⁷ EU ABS Regulation at Art. 4(1); Commission Guidance Document at 313/10; Godt, ‘The Multi-Level Implementation of the Nagoya Protocol in the European Union’, p. 312.

¹⁶⁸ EU ABS Regulation at Art. 4(5); Commission Guidance Document at 313/11.

namely an IRCC, or information on the date and place of access, description of the resource or ATK, the source, access requirements, and permits/MAT if applicable.¹⁶⁹ Users are obliged to retain any information relevant for ABS for a 20 year period after the end of the period of utilisation.¹⁷⁰

Where GRs are obtained from a collection registered under Article 5 of the EU ABS Regulation, the user is considered to have exercised due diligence in terms of seeking out information, but the user must keep on hand the information provided by the collection for the purposes of making a declaration under Article 7(1) or 7(2), discussed in the following paragraph.¹⁷¹

Monitoring under the EU ABS Regulation rests on two pillars of administrative control. The first checkpoint relates to the research stage, when a research project involving utilisation of GRs and ATK is subject to external funding (public or private) in the form of a grant.¹⁷² The language of the EU ABS Regulation makes it clear that the a declaration needs to be requested by the Member States and the Commission, but many Member States envisage implementation of this obligation through legislative or administrative measures at national level, not necessarily through requests targeted to individual recipients of funding.¹⁷³ The Implementing Regulation clarifies that the declaration needs to be made after the first instalment of funding has been received and all the GRs and ATK that are utilised in the funded project have been obtained, but in any case no later than at the time of the final report/end of project.¹⁷⁴ The Member States' national authorities may further specify the timing within this period, either in the context of individually targeted requests or by general legal/administrative provisions.¹⁷⁵

The second checkpoint is the stage of final development of a product developed via the utilisation of GRs or ATK.¹⁷⁶ The Implementing Regulation refers to five different instances where a declaration must be made, with the declaration made upon the first of the following events occurring: 1) market approval or authorisation is sought for a product developed via the utilisation of GRs and ATK; 2) a notification required prior to placing for the first time on the EU market is made for a product developed via the utilisation of GRs and ATK; 3) placing on the EU market for the first time a product developed via the utilisation of GRs and ATK for which no market approval, authorisation or notification is required; 4) the result of the utilisation is sold or transferred in any other way to a natural or legal person within the EU in order for that person to carry out one of the above activities; or, 5) the utilisation in the EU has ended and its outcome is sold or transferred in any other way to a natural or legal person outside the EU.¹⁷⁷

Article 7(2) demands that users declare to the competent authorities established under Art 6(1) that they have fulfilled the obligation under Article 5 on the occasion of requesting market approval for a product or at the time of commercialization where market approval is not required. Article 7 is complemented by Article 9 which provides for checks on user compliance by the competent authorities.¹⁷⁸ For both checkpoints, the

¹⁶⁹ EU ABS Regulation at Art. 4(3); Commission Guidance Document at 313/12.

¹⁷⁰ EU ABS Regulation at Art. 4(6); Commission Guidance Document at 313/13.

¹⁷¹ Commission Guidance Document at 313/13.

¹⁷² EU ABS Regulation at Art 7(1); Implementing Regulation at Art 5(5): “any financial contribution by means of a grant to carry out research, whether from commercial or non-commercial sources. It does not cover internal budgetary resources of private or public entities.”

¹⁷³ Commission Guidance Document at 313/14.

¹⁷⁴ Implementing Regulation at Art. 5(2).

¹⁷⁵ Commission Guidance Document at 313/14.

¹⁷⁶ EU ABS Regulation at Art. 7(2).

¹⁷⁷ Implementing Regulation at Art. 6.

¹⁷⁸ Godt, “The Multi-Level Implementation of the Nagoya Protocol in the European Union”, p. 314.

contents of the required declaration are specified in annexes to the EU Implementing Regulation 2015/1866.¹⁷⁹ However, the establishment of additional checkpoints also appears to be possible.

Plant Treaty

The European Community (European Union since 2009) ratified the Plant Treaty in 2004,¹⁸⁰ implementing it through several pieces of regulation. The instrument of approval of the Plant Treaty indicates that “Member States shall endeavour to take the necessary steps with a view to depositing their instruments of ratification or approval simultaneously with those of the European Community and the other Member States and as far as possible not later than 31 March 2004.”¹⁸¹ All members of the EU are now Parties to the Plant Treaty. Clarifying the matter of IPR over plants, a declaration was attached to the instrument of approval, indicating that “The European Community interprets Article 12.3d of the International Treaty on Plant Genetic Resources as recognising that [PGRFA] or their genetic parts or components which have undergone innovation may be the subject of [IPR] provided that the criteria relating to such rights are met.”¹⁸²

Shortly after the EU’s ratification of the Plant Treaty, Council Regulation (EC) No 870/2004 was adopted establishing a (second) EU programme on the conservation, characterisation, collection and utilisation of GRs in agriculture.¹⁸³ The objective of Regulation 870/2004 was “With a view to achieving the aims of the [Common Agricultural Programme], and to implementing the commitments taken at international level, a Community programme is hereby established for the period 2004 to 2006 to complement and promote, at Community level, the work undertaken in the Member States for the conservation, characterisation, collection and utilisation of genetic resources in agriculture.”¹⁸⁴ Its scope covered “plant, microbial and animal genetic resources which are or could be of use in agriculture.”¹⁸⁵

The programme was comprised of “targeted actions, concerted actions and accompanying actions, as specified in Articles 5, 6 and 7”¹⁸⁶ and took into account, among others, “relevant international processes, developments and agreements, in particular the [CBD and Plant Treaty].”¹⁸⁷ Four targeted actions were aimed for under the programme: “(a) actions promoting the ex situ and in situ conservation, characterisation, collection and utilisation of genetic resources in agriculture; (b) the establishment of a European decentralised, permanent and widely accessible web-based inventory of genetic resources currently conserved in situ including in situ/on-farm genetic resources conservation activities; (c) the establishment of a European decentralised, permanent and widely accessible web-based inventory of the ex situ collections (gene banks) and in situ facilities (resources) and databases currently available or being developed on the basis of national inventories; [and] (d) the promotion of regular exchanges of technical and scientific information, in particular on the origins and individual characteristics of available genetic resources, among competent organisations in the Member States.”¹⁸⁸ The first actions would be “transnational, taking into account, if appropriate,

¹⁷⁹ Commission Guidance Document at 313/14.

¹⁸⁰ Council decision of 24 February 2004 concerning the conclusion, on behalf of the European Community, of the International Treaty on Plant Genetic Resources for Food and Agriculture, 2004/869/EC.

¹⁸¹ Council decision of 24 February 2004 concerning the conclusion, on behalf of the European Community, of the International Treaty on Plant Genetic Resources for Food and Agriculture, para. 2.

¹⁸² Council decision of 24 February 2004 concerning the conclusion, on behalf of the European Community, of the International Treaty on Plant Genetic Resources for Food and Agriculture, Annex C.

¹⁸³ Council Regulation (EC) No 870/2004 of 24 April 2004 establishing a Community programme on the conservation, characterisation, collection and utilisation of genetic resources in agriculture and repealing Regulation (EC) No 1467/94, OJ L 162, 30 April 2004, p. 18–28.

¹⁸⁴ Council Regulation (EC) No 870/2004 at Art. 1.

¹⁸⁵ Council Regulation (EC) No 870/2004 at Art. 2.

¹⁸⁶ Council Regulation (EC) No 870/2004 at Art. 4(1).

¹⁸⁷ Council Regulation (EC) No 870/2004 at Art. 4(2)(b).

¹⁸⁸ Council Regulation (EC) No 870/2004 at Art. 5.

biogeographic regional aspects and promote or complement, at Community level, work implemented at regional or national level” and could not involve aid to maintain nature protection areas.¹⁸⁹

The concerted actions would “promote the exchange of information on thematic issues for the purpose of improving the coordination of actions and programmes for the conservation, characterisation, collection and utilisation of genetic resources in Community agriculture [and be] transnational.”¹⁹⁰ The accompanying actions included “information, dissemination and advisory actions involving the organisation of seminars, technical conferences, meetings with non-governmental organisations (NGOs) and other relevant stakeholders, training courses and the preparation of technical reports.”¹⁹¹

Regulation 870/2004 required a report by a group of independent experts to assess the results, and to make appropriate recommendations.¹⁹² This group of experts concluded that the programme had “Stimulated considerable interest among various groups of stakeholders within the European Union and beyond; Promoted collaboration among diverse groups of stakeholders in different countries; Led to the establishment of useful links and partnerships across Europe; Advanced the understanding of some local practices and needs; Led to useful results and guidelines for the conservation of valuable genetic resources.; Established well characterised and evaluated core collections and cryo-banks of various plant and animal species; [and] Improved the scientific knowledge on the nature, management and potential of genetic resources of some species of farm animals, crops and forest trees in Europe.”¹⁹³

The group of experts recommended that, since the programme’s beneficiaries were mainly research institutes, a follow-up programme should require that “the primary objective of selected Actions be the delivery of appropriate utilisation of agricultural genetic resources in practice”¹⁹⁴ and focus more on involving end-users. Once the programme came to an end in 2012, the European Commission recommended that actions should be incorporated into the EU Rural Development Policy as well as the Research & Innovation Policy, namely the European Innovation Partnership and the Research & Innovation Framework Horizon 2020.¹⁹⁵ In this light, the Commission also proposed a revision to EU legislation on plant reproductive material that aimed to facilitate access to markets of traditional varieties and less uniform varieties,¹⁹⁶ but the proposal was rejected by the European Parliament in 2014.¹⁹⁷ The European Commission withdrew its proposal in 2015¹⁹⁸ and has not introduced a new one.

In order to standardize the trade in seeds in the EU, Directive 2002/55¹⁹⁹ sets conditions for the inclusion of varieties in a common catalogue of varieties of agricultural plant species. The catalogue is a compilation of national catalogues, and listing allows for commercialization of a variety in the territory of all EU Member

¹⁸⁹ Council Regulation (EC) No 870/2004.

¹⁹⁰ Council Regulation (EC) No 870/2004 at Art. 6.

¹⁹¹ Council Regulation (EC) No 870/2004 at Art. 7.

¹⁹² Council Regulation (EC) No 870/2004 at Art. 14.

¹⁹³ G. Banos et al, *Independent Expert Evaluation of Council Regulation (EC) No. 870/2004* (2012), p. 49.

¹⁹⁴ G. Banos et al, p. 50.

¹⁹⁵ European Commission, *Report from the Commission to the European Parliament, the Council and the European Economic and Social Committee: Agricultural Genetic Resources - from conservation to sustainable use*, COM (2013) 838 final.

¹⁹⁶ *Proposal for a Regulation of the European Parliament and of the Council on the production and making available on the market of plant reproductive material*, COM(2013) 262 final.

¹⁹⁷ *European Parliament legislative resolution of 11 March 2014 on the proposal for a regulation of the European Parliament and of the Council on the production and making available on the market of plant reproductive material (plant reproductive material law) (COM(2013)0262 — C7-0121/2013 — 2013/0137(COD))*, OJ C 378, 9.11.2017, p. 303–303; See also *Opinion of the Committee of the Regions: Agricultural genetic resources — from conservation to sustainable use*, 2014/C 271/13.

¹⁹⁸ *Withdrawal of Commission proposals*, OJ C 80, 7.3.2015, p. 17–23.

¹⁹⁹ *Council Directive 2002/55/EC of 13 June 2002 on the marketing of vegetable seed*, OJ L 193, 20.7.2002, p. 33–59.

States.²⁰⁰ The Directive requires the creation of “Specific conditions... to take account of developments in relation to the conservation in situ and the sustainable use of plant genetic resources through growing and marketing of seed of: (a) landraces and varieties which have been traditionally grown in particular localities and regions and threatened by genetic erosion without prejudice to the provisions of Council Regulation (EC) No 1467/94 of 20 June 1994 on the conservation, characterisation, collection and utilisation of genetic resources in agriculture... [and] (b) varieties with no intrinsic value for commercial crop production but developed for growing under particular conditions.”²⁰¹ In keeping with this requirement, several Directives were adopted, namely Commission Directive 2008/62/EC²⁰² and Commission Directive 2009/145/EC.²⁰³

Directive 2008/62 establishes derogations from Directive 2002/55 on the in situ conservation and sustainable use of PGR through growing and marketing: “(a) for acceptance for inclusion in the national catalogues of varieties of agricultural plant species, as provided for in Directive 2002/53/EC, of landraces and varieties which are naturally adapted to the local and regional conditions and threatened by genetic erosion; (b) for the marketing of seed and seed potatoes of such landraces and varieties.”²⁰⁴ The Directive allows Member States to accept in their national catalogues varieties which are naturally adapted to the local and regional conditions and threatened by genetic erosion subject to certain requirements, which will be referred to in the common catalogue as conservation varieties.²⁰⁵

The requirements include that “a landrace or variety shall present an interest for the conservation of plant genetic resources”²⁰⁶ and that “no official examination shall be required if the following information is sufficient for the decision on the acceptance of the conservation varieties: (a) the description of the conservation variety and its denomination; (b) the results of unofficial tests; (c) knowledge gained from practical experience during cultivation, reproduction and use, as notified by the applicant to the Member State concerned; (d) other information, in particular from the plant genetic resource authorities or from organisations recognised for this purpose by the Member States.”²⁰⁷ On accepting a conservation variety, the Member State must identify the locality/localities, region/regions, in which it has historically been grown and to which it is naturally adapted, known as the region of origin.²⁰⁸ The Member State must also ensure that a conservation variety is maintained in its region of origin,²⁰⁹ and ensure that the seed of the variety is only produced in the region of origin (subject to specific environmental problems).²¹⁰

Directive 2009/145 establishes derogations to Directive 2002/55 on the in-situ conservation and sustainable use of PGR through growing and marketing: “(a) for acceptance for inclusion in the national catalogues of varieties of vegetable species, as provided for in Directive 2002/55/EC, of landraces and varieties which have

²⁰⁰ G. Würtenberger, P. van der Kooij, B. Kiewiet, and M. Ekvad, *European Union Plant Variety Protection*, 2 ed. (Oxford University Press, 2015) at para 1.15.

²⁰¹ *Council Directive 2002/55/EC of 13 June 2002 on the marketing of vegetable seed* at Arts. 44(2) and (3)

²⁰² *Commission Directive 2008/62/EC of 20 June 2008 providing for certain derogations for acceptance of agricultural landraces and varieties which are naturally adapted to the local and regional conditions and threatened by genetic erosion and for marketing of seed and seed potatoes of those landraces and varieties*, OJ L 162, 21.6.2008, p. 13–19.

²⁰³ *Commission Directive 2009/145/EC of 26 November 2009 providing for certain derogations, for acceptance of vegetable landraces and varieties which have been traditionally grown in particular localities and regions and are threatened by genetic erosion and of vegetable varieties with no intrinsic value for commercial crop production but developed for growing under particular conditions and for marketing of seed of those landraces and varieties*, OJ L 312, 27.11.2009, p. 44–54.

²⁰⁴ *Commission Directive 2008/62/EC* at Art. 1(1).

²⁰⁵ *Commission Directive 2008/62/EC* at Art. 3.

²⁰⁶ *Commission Directive 2008/62/EC* at Art. 4(1).

²⁰⁷ *Commission Directive 2008/62/EC* at Art 5.

²⁰⁸ *Commission Directive 2008/62/EC* at Art 8.

²⁰⁹ *Commission Directive 2008/62/EC* at Art 9.

²¹⁰ *Commission Directive 2008/62/EC* at Art 11(1).

been traditionally grown in particular localities and regions and threatened by genetic erosion, hereinafter ‘conservation varieties’; and (b) for acceptance for inclusion in the catalogues referred to in point (a) of varieties with no intrinsic value for commercial crop production but developed for growing under particular conditions, hereinafter ‘varieties developed for growing under particular conditions’; and (c) for the marketing of seed of such conservation varieties and varieties developed for growing under particular conditions.”²¹¹

Like in Directive 2008/62, the landrace or variety must present an interest for the conservation of plant genetic resources to be accepted as a conservation variety.²¹² Similarly, no official examination is required if the following information is sufficient for the decision on the acceptance of the conservation varieties: “(a) the description of the conservation variety and its denomination; (b) the results of unofficial tests; (c) knowledge gained from practical experience during cultivation, reproduction and use as notified by the applicant to the Member State concerned; (d) other information, in particular from the plant genetic resource authorities or from organisations recognised for this purpose by the Member States.”²¹³ On accepting a conservation variety, the Member State must identify the region of origin,²¹⁴ ensure that the conservation variety is maintained in its region of origin,²¹⁵ and that seeds of that variety are only produced in the region of origin (subject to specific environmental problems).²¹⁶

An additional regulation of interest in the Plant Treaty context is Commission Directive 2010/60/EU.²¹⁷ The Directive allows Member States to “authorise marketing of mixtures of various genera, species and, where relevant, subspecies, intended for use in the preservation of the natural environment in the context of the conservation of genetic resources...”²¹⁸ which are referred to as preservation mixtures. When a preservation mixture is authorized, the Member State must define the region with which that mixture is naturally associated, known as the region of origin.²¹⁹ Preservation mixtures can be authorized for marketing by Member States in their region of origin so long as they fulfil various requirements relating to either directly harvested preservation mixtures, or crop-grown preservation mixtures.²²⁰

Directly harvested mixtures must be sourced from collection sites in the region of origin that have not been sown in the 40 years prior to the date of the application by the producer,²²¹ and “[t]he percentage of the components of the directly harvested preservation mixture that are species and, where relevant, subspecies which are typical for the habitat type of the collection site and which are, as components of the mixture, of importance for the preservation of the natural environment in the context of conservation of genetic resources, shall be adequate for the purpose of recreating the habitat type of the collection site.”²²²

Crop-grown preservation mixtures must also be sourced from the region of origin at a collection site which has not been sown in the 40 years prior to the date of the application by the producer,²²³ and “[t]he seed of the crop-grown preservation mixture shall be of species and, where relevant, subspecies which are typical for

²¹¹ *Commission Directive 2009/145/EC* at Art 1.

²¹² *Commission Directive 2009/145/EC* at Art. 4.

²¹³ *Commission Directive 2009/145/EC* at Art. 5.

²¹⁴ *Commission Directive 2009/145/EC* at Art. 8(1).

²¹⁵ *Commission Directive 2009/145/EC* at Art. 9.

²¹⁶ *Commission Directive 2009/145/EC* at Art. 13(1).

²¹⁷ *Commission Directive 2010/60/EU of 30 August 2010 providing for certain derogations for marketing of fodder plant seed mixtures intended for use in the preservation of the natural environment*, OJ L 228, 31.8.2010, p. 10–14.

²¹⁸ *Commission Directive 2010/60/EU* at Art. 2(1).

²¹⁹ *Commission Directive 2010/60/EU* at Art. 3.

²²⁰ *Commission Directive 2010/60/EU* at Art. 4.

²²¹ *Commission Directive 2010/60/EU* at Art. 5(1).

²²² *Commission Directive 2010/60/EU* at Art. 5(2).

²²³ *Commission Directive 2010/60/EU* at Art. 6(1).

the habitat type of the collection site and which are, as components of the mixture, of importance for the preservation of the natural environment in the context of conservation of genetic resources.”²²⁴

UPOV

European Community Regulation 2100/94 on Community plant variety rights (CPVR)²²⁵ created the Community Plant Variety Office (CPVO) to grant PVP at the EU level. Importantly, the CPVR does not harmonize national PVP regimes, but rather creates an autonomous regional PVP regime that complements national PVP regimes and allows for the grant of rights that are valid across the EU.²²⁶ The CPVR was adopted before the EU became a member of UPOV, the Preamble indicates that it took the UPOV Convention into account, and EU deposited its instrument of accession to UPOV on 29 July 2005.

The CPVR grants PVP on the basis of DUS criteria and test guidelines similar to those contained in the UPOV Convention.²²⁷ In the case of agricultural varieties, the variety must also be of satisfactory value for cultivation and use (this does not apply to vegetable varieties).²²⁸ Although national systems based on the UPOV Convention remain unaffected, it is not possible to claim national PVP at the same time as an EU right for the same variety.²²⁹ Except for civil law claims for infringement and damages, which can be litigated at the national level, the substantive and procedural rules for EU-level PVP are determined by EU rules.²³⁰

The Preamble of the CPVR recognizes the general UPOV exceptions to PVP, indicating that “... in order to stimulate plant breeding, the system basically confirms the internationally accepted rule of free access to protected varieties for the development therefrom, and exploitation, of new varieties,” also known as the breeders’ privilege. The Preamble also recognizes that exercise of Community PVP “must be subjected to restrictions laid down in provisions adopted in the public interest... this includes safeguarding agricultural production... that purpose requires an authorization for farmers to use the product of the harvest for propagation under certain conditions,” also known as the farmer’s privilege, and that conditions are established at the Community level. Furthermore, the Preamble clarifies the compulsory licensing exception, indicating that “... compulsory licensing should also be provided for under certain circumstances in the public interest, which may include the need to supply the market with material offering specified features, or to maintain the incentive for continued breeding of improved varieties.” Lastly, it indicates that the CPVR implements the prohibition against dual protection (patenting plant varieties) “only to the extent that the European Patent Convention so requires, i.e. to plant varieties as such.”

Article 14 of the CPVR outlines the farmer’s privilege. Restating the justification made in the preamble, that the farmer’s privilege exists *for the purposes of safeguarding agricultural production*, the Article indicates that “... farmers are authorized to use for propagating purposes in the field, on their own holding the product of the harvest which they have obtained by planting, on their own holding, propagating material of a variety other than a hybrid or synthetic variety, which is covered by a Community plant variety right.”²³¹

²²⁴ Commission Directive 2010/60/EU at Art. 6(2).

²²⁵ Council Regulation (EC) No 2100/94 of 27 July 1994 on Community plant variety rights, OJ L 227 of 01.09.94 p.1, amended by Council Regulation (EC) No 2506/95 of 25 October 1995, Council Regulation (EC) No 807/2003 of 14 April 2003, Council Regulation (EC) No 1650/2003 of 18 June 2003, Council Regulation (EC) No 873/2004 of 29 April 2004, and Council Regulation (EC) No 15/2008 of 20 December 2007. [“CVPR”]

²²⁶ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at paras 1.07, 1.08.

²²⁷ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at paras. 3.26, 3.27, 3.44, 3.53, 3.60.

²²⁸ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at para 1.16.

²²⁹ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at para 1.13.

²³⁰ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at paras 1.09, 1.10, 1.14.

²³¹ CPVR at Art. 14(1).

The CPVR subsequently indicates that the privilege only exists in regards to a limited number of agricultural plant species, namely: “(a) Fodder plants: *Cicer arietinum* L. — Chickpea milkvetch; *Lupinus luteus* L. — Yellow lupin; *Medicago sativa* L. — Lucerne; *Pisum sativum* L. (*partim*) — Field pea; *Trifolium alexandrinum* L. — Berseem/Egyptian clover; *Trifolium resupinatum* L. — Persian clover; *Vicia faba* — Field bean; *Vicia sativa* L. — Common vetch; and, in the case of Portugal, *Lolium multiflorum lam* — Italian rye-grass; (b) Cereals: *Avena sativa* — Oats; *Hordeum vulgare* L. — Barley; *Oryza sativa* L. — Rice; *Phalaris canariensis* L. — Canary grass; *Secale cereale* L. — Rye; *X Triticosecale Wittm.* — Triticale; *Triticum aestivum* L. *emend. Fiori et Paol.* — Wheat; *Triticum durum* Desf. — Durum wheat; *Triticum spelta* L. — Spelt wheat; (c) Potatoes: *Solanum tuberosum* — Potatoes (d) Oil and fibre plants: *Brassica napus* L. (*partim*) — Swede rape; *Brassica rapa* L. (*partim*) — Turnip rape; *Linum usitatissimum* — linseed with the exclusion of flax.”²³² Unlike the UPOV, the two aforementioned paragraphs of the CPVR restrict the farmer’s privilege to agricultural applications only, to when the farmer uses of the product of their own harvest on their own holding, and to a fixed list of species.²³³ The sale of the seeds by a farmer to another farmer for propagating purposes would therefore be an infringing act.²³⁴

To fully elaborate the farmer’s privilege, the CPVR required the creation of implementing rules containing “[c]onditions to give effect to the derogation ... and to safeguard the legitimate interests of the breeder and of the farmer.”²³⁵ These conditions were established by Commission Regulation (EC) No 1768/95.²³⁶ The Preamble to Regulation 1768/95 indicates that the obligations found in the CPVR “relate essentially to the payment, by farmers, of an equitable remuneration to the holder for the use made of the derogation, to the supply of information, to the safeguarding of the identity of the product of the harvest entered for processing with that resulting from processing as well as to the monitoring of compliance with the provisions on the derogation.” The CPVR puts forward two different possibilities on the question of remuneration. First, “small farmers shall not be required to pay any remuneration to the holder.”²³⁷ Second, “other farmers shall be required to pay an equitable remuneration to the holder, which shall be sensibly lower than the amount charged for the licensed production of propagating material of the same variety in the same area.”²³⁸

Article 2 of Regulation 1768/95 speaks specifically to the question of balancing the interests of breeders and holders through various conditions for the fair application of the farmer’s privilege. First, “[t]he conditions ... shall be implemented both by the holder, representing the breeder, and by the farmer in such a way as to safeguard the legitimate interests of each other.”²³⁹ Second, “[t]he legitimate interests shall not be considered to be safeguarded if one or more of these interests are adversely affected without account being taken of the need to maintain a reasonable balance between all of them, or of the need for proportionality between the purpose of the relevant condition and the actual effect of the implementation thereof.”²⁴⁰ Article 4 clarifies the spatial limits to the farmer’s privilege, stating that a farmer’s holding is “... considered to be any holding

²³² CVPR at Art. 14(2).

²³³ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at paras 6.53, 6.55.

²³⁴ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at para. 6.53.

²³⁵ CVPR at Art. 14(3).

²³⁶ *Commission Regulation (EC) No 1768/95 of 24 July 1995 implementing rules on the agricultural exemption provided for in Article 14 (3) of Council Regulation (EC) No 2100/94 on Community plant variety rights*, OJ L 173 , 25/07/1995 p. 14–21; amended by *Commission Regulation (EC) No 2605/98 of 3 December 1998 amending Regulation (EC) No 1768/95 implementing rules on the agricultural exemption provided for in Article 14(3) of Council Regulation (EC) No 2100/94 on Community Plant Variety Rights*, OJ L 328 , 04/12/1998, p. 6-7. [“Commission Regulation (EC) No 1768/95”]

²³⁷ CPVR at Art. 14(3).

²³⁸ CPVR at Art. 14(3).

²³⁹ *Commission Regulation (EC) No 1768/95* at Art. 2(1).

²⁴⁰ *Commission Regulation (EC) No 1768/95* at Art. 2(2).

or part thereof which the farmer actually exploits for plant growing, whether as his property or otherwise managed under his own responsibility and on his own account, in particular in the case of leaseholds.”²⁴¹

In the typical case, where a farmer is required to pay equitable remuneration, breeders can secure the amount in the contract of sale, as “[t]he level of the equitable remuneration to be paid to the holder... may form the object of a contract between the holder and the farmer concerned.”²⁴² If no such contract has been agreed to or does not apply, “... the level of remuneration shall be sensibly lower than the amount charged for the licensed production of propagating material of the lowest category qualified for official certification, of the same variety in the same area.”²⁴³ The notion of ‘sensibly lower remuneration’ is defined as remuneration that “does not exceed the [amount] necessary to establish or to stabilize, as an economic factor determining the extent to which use is made of the derogation, a reasonably balanced ratio between the use of licensed propagating material and the planting of the product of the harvest of the respective varieties covered by a Community plant variety right. Such ratio shall be considered to be reasonably balanced, if it ensures that the holder obtains, as a whole, a legitimate compensation for the total use of his variety.”²⁴⁴

The CPVR provides for several further restrictions on PVP.²⁴⁵ These include the possibility of carrying out acts done privately and for non-commercial purposes,²⁴⁶ acts done for experimental purposes,²⁴⁷ and acts done for the purpose of breeding, or discovering and developing other varieties,²⁴⁸ and acts relating to ‘variety constituents’ or harvested material of a protected variety, and acts relating to products obtained from the material.²⁴⁹ The final restrictions are that exercise of PVP cannot “violate any provisions adopted on the grounds of public morality, public policy or public security, the protection of health and life of humans, animals or plants, the protection of the environment, the protection of industrial or commercial property, or the safeguarding of competition, of trade or of agricultural production,”²⁵⁰ violate the farmer’s privilege, or violate the compulsory licensing provisions of the CPVR.²⁵¹

Judicial Treatment

The Plant Treaty and Commission Directive 2009/145/EC were interpreted by the Third Chamber of the European Court of Justice in the 2012 *Kokopelli* case.²⁵² *Kokopelli*, a non-profit association that sells seed of old vegetable and flower varieties originating from organic agriculture and supplies to its members varieties of vegetables which are not widely cultivated in France, was sued in French court by Baumaux, a business that produces and markets flower and vegetable seed, for unfair competition.²⁵³ The Nancy Regional Court ordered *Kokopelli* to pay damages to *Graines Baumaux*, finding that *Kokopelli* was engaging in acts of unfair competition by offering for sale vegetable seed which was neither in the French catalogue nor in the common catalogue of varieties of vegetable species.²⁵⁴ *Kokopelli* appealed against that judgment to the Nancy Court of Appeal, which decided to stay the proceedings and to refer the question of whether the Council Directives on

²⁴¹ *Commission Regulation (EC) No 1768/95* at Art. 2(2).

²⁴² *Commission Regulation (EC) No 1768/95* at Art. 5(1).

²⁴³ *Commission Regulation (EC) No 1768/95* at Art. 5(2).

²⁴⁴ *Commission Regulation (EC) No 1768/95* at Art. 5(3).

²⁴⁵ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at para. 6.80.

²⁴⁶ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at paras. 6.81-6.83. CVPR, Art. 15(a).

²⁴⁷ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at paras. 6.84-6.86. CVPR, Art. 15(b).

²⁴⁸ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at para. 6.87. CVPR, Art. 15(c).

²⁴⁹ Würtenberger, van der Kooij, Kiewiet, and Ekvad, *European Union Plant Variety Protection* at paras. 6.88, 6.89. CVPR, Art. 15(d).

²⁵⁰ CVPR at Art. 13(8).

²⁵¹ CVPR at Art. 15(e).

²⁵² *Association Kokopelli v Graines Baumaux SAS*, Case C-59/11, ECLI:EU:C:2012:447.

²⁵³ *Association Kokopelli v Graines Baumaux SAS*, paras. 21-22.

²⁵⁴ *Association Kokopelli v Graines Baumaux SAS*, para. 23.

seeds are valid in the light of fundamental rights and principles of the European Union, and also in the light of the commitments arising from the Plant Treaty, to the Court of Justice for a preliminary ruling.²⁵⁵

On the question of non-compliance with commitments arising from the Plant Treaty, the Court of Justice ruled that the validity of Directives 2002/55 and 2009/145 was not affected by commitments under the Plant Treaty. The primary basis for this determination was that the Plant Treaty “does not include any provision which, as regards its content, is unconditional and sufficiently precise to challenge the validity of the Directives.”²⁵⁶ The Court ruled that Articles 5.1 and 6 of the Plant Treaty leave discretion to EU Member States to adopt appropriate measures on PGRFA,²⁵⁷ and that Article 9.3 on farmers’ rights does not contain an obligation that is sufficiently unconditional and precise to challenge the validity of the Directives.²⁵⁸ In the subsequent trial at the Nancy Court of Appeal, it was determined that Kokopelli was not compliant with the obligation under national law or Directive 2002/55 to sell registered seeds, but that it was not liable for damages resulting from unfair competition as Graines Baumaux could not demonstrate material harm resulting from this practice.²⁵⁹

The relationship between the Nagoya Protocol and the UPOV Convention was raised in the case *Ackermann Saatzücht GmbH & Co.KG and Others* at the first stage in 2015 and on appeal in 2016.²⁶⁰ The case aimed at annulling Regulation No 511/2014 implementing the Nagoya Protocol on the basis of an alleged incompatibility with the terms of the UPOV Convention and the CPVR. The specific point raised was that the user obligations found in Article 4 of Regulation No 511/2014 are inconsistent with the breeder’s right found in Article 15 of the UPOV Convention and incorporated in the CPVR. Unfortunately for the purposes of understanding the linkages between these provisions, both the General Court and the Court of Justice dismissed the actions as inadmissible on technical grounds without ruling on the question of the alleged incompatibility of breeder’s rights and user obligations.²⁶¹

The CPVR itself, and the farmer’s privilege provisions in particular, is subject to extensive judicial treatment. This is likely because “the holders of plant variety rights alone are responsible for the control and supervision of the use of the protected varieties in the context of authorised planting.”²⁶² These rulings have affirmed that a farmer can only rely on the farmer’s privilege as a defense where they have satisfied all of the criteria found in the CPVR, such as the payment of equitable remuneration to the holder. If a farmer has not done so, they cannot rely on the farmer’s privilege and will be deemed to have carried out an infringing act.²⁶³ Where no contract exists establishing terms for payment, “a farmer who has planted propagating material obtained from a protected plant variety (farm-saved seed)... is required to pay the equitable remuneration ... within the period that expires at the end of the marketing year during which that planting took place.”²⁶⁴

²⁵⁵ *Association Kokopelli v Graines Baumaux SAS*, para. 25.

²⁵⁶ *Association Kokopelli v Graines Baumaux SAS*, para. 66.

²⁵⁷ *Association Kokopelli v Graines Baumaux SAS*, paras. 87-89.

²⁵⁸ *Association Kokopelli v Graines Baumaux SAS*, paras. 91-92.

²⁵⁹ *Association Kokopelli c/ SAS Graines Baumaux*, Cour d’appel de Nancy, Arrêt N° 1785 /2014 du 09 septembre 2014.

²⁶⁰ *Ackermann Saatzücht GmbH & Co.KG and Others v European Parliament and Council of the European Union*, Joined Cases C-408/15 P and C-409/15 P, ECLI:EU:C:2016:893.

²⁶¹ *Ibid* at paras 13 and 53.

²⁶² *Geistbeck v Saatgut-Trenhandverwaltungs GmbH*, 5 July 2012, C-509/10, EU:C:2012:416 at para. 42.

²⁶³ *Ibid.* at paras. 34-5.

²⁶⁴ *Saatgut-Trenhandverwaltungs GmbH v Gerhard und Jürgen Vogel GbR and Others*, 25 June 2015, C-242/14, ECLI:EU:C:2015:422 at para. 32.

Switzerland

Nagoya Protocol

Switzerland implements its obligations under the Nagoya Protocol through the *Federal Act on the Protection of Nature and Cultural Heritage* (NCHA)²⁶⁵ and the *Ordinance on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization* (NagO).²⁶⁶ The NCHA was amended in 2014 in preparation for the entry into force of the Nagoya Protocol.

One aim of the NCHA is to “promote the conservation of biological diversity and the sustainable use of its components through the fair and equitable sharing of benefits arising from genetic resources.”²⁶⁷ The relevant substantive provisions of the NCHA pertain primarily to due diligence. First, any person who utilizes GRs (“research and development on the genetic or biochemical composition of genetic resources, including through the application of biotechnology”),²⁶⁸ or benefits directly from their utilisation, must apply due diligence appropriate to the circumstances to ensure that the resources have been accessed lawfully (“in accordance with the domestic [ABS] regulatory requirements of the Party to the Nagoya Protocol that provides the resource”),²⁶⁹ and that MAT are established for the fair and equitable sharing of the benefits.²⁷⁰ If these requirements are not met, users must ensure that they are met subsequently, or must refrain from utilising the GRs concerned or from benefiting directly from their utilisation.

In exceptional circumstances, the Federal Council may provide for a delay in meeting the requirements for GRs that are pathogenic or harmful organisms in emergency situations.²⁷¹ Notification of compliance with the due diligence requirement must be given to the FOEN before market authorisation has been obtained or, if not required, before commercialisation of products developed based on GRs.²⁷² Information relating to compliance with due diligence may be passed on to the ABS-CH and to the CNAs of Parties to the Nagoya Protocol. The name of the notifying person, the product to be commercialised, the utilised GRs, the date on which it was accessed, and its source are made publicly available.²⁷³

The Federal Council has designated the authorities responsible for verifying compliance with the notification requirement.²⁷⁴ It may provide for exemptions to the notification requirement if the verification of compliance with the due diligence requirement is already ensured by other means.²⁷⁵ The obligations in this paragraph also apply to ATK unless it is already freely available to the public.²⁷⁶ GRs are not subject to the above requirements if they: originate from a non-Party; originate from a country that has no domestic ABS regulatory requirements; originate from an area beyond national jurisdiction of any Party; are covered for a specific use by a specialised international ABS instrument; are human GRs; or, are commodities or goods in trade are not utilised as GRs.²⁷⁷

²⁶⁵ *Loi fédérale sur la protection de la nature et du paysage du 1er juillet 1966*, RS 451. [NCHA]

²⁶⁶ *Ordonnance sur l'accès aux ressources génétiques et le partage juste et équitable des avantages découlant de leur utilisation du 11 décembre 2015*, RS 451.61. [NagO]

²⁶⁷ NCHA at Art. 1(d bis)(9).

²⁶⁸ NCHA at Art. 23(n)(3).

²⁶⁹ NCHA at Art. 23(n)(4).

²⁷⁰ NCHA at Art. 23(n)(1).

²⁷¹ NCHA at Art. 23(n)(5).

²⁷² NCHA at Art. 23(o)(1).

²⁷³ NCHA at Art. 23(o)(2).

²⁷⁴ NagO at Art. 11.

²⁷⁵ NCHA at Art. 23(o)(2).

²⁷⁶ NCHA at Art. 23(p).

²⁷⁷ NCHA at Art. 23(n)(2).

The NagO elaborates rules on access to GRs in Switzerland.²⁷⁸ First, on accessing GRs in Switzerland, the user must record and retain information and pass it on to subsequent users, namely: the name and address of the user; a description of the GRs or subject matter and its utilisation; the date on which and location where the GRs was accessed; in the case of direct acquisition of the GRs from a third party, the name and address of this person and the date of acquisition; and, in the case of the transfer of GRs, the name and address of the subsequent user and the date of the transfer.²⁷⁹ If the name and address of the person from which the GRs is directly acquired are subject to trade secrecy, the information does not need to be passed on to subsequent users.²⁸⁰ The aforementioned information must be retained for ten years after the end of utilisation or directly benefiting and for as long as the GRs or the product developed on the basis of the utilised genetic resource is retained, and be made available on request to the implementing authorities.²⁸¹

Following these provisions, the NagO indicates that the user must notify the FOEN of the aforementioned information before market approval or, if not required, before the commercialisation of products developed on the basis of utilised GRs.²⁸² Notification can also be given voluntarily, in particular if no commercialisation is intended.²⁸³ As evidence of the notification the user receives a register number and, on request, an attestation that Swiss ABS provisions have been complied with.²⁸⁴ Where the relevant information on GRs has already been recorded and made available to the FOEN in global form in connection with a different procedure, they are exempt from the notification requirements.²⁸⁵

The NCHA also holds that the Confederation may support the conservation and sustainable use of GRs.²⁸⁶ The NagO specifies the particularities of this support. First, applications for financial assistance for the conservation and sustainable use of GRs must be submitted to the FOEN.²⁸⁷ Second, support may be given in particular to the activities of institutions or organisations that engage in in-situ or ex-situ conservation, characterisation, or sustainable use of GRs or employ benefits arising from the utilisation of GRs for the conservation of biodiversity and the sustainable use of its components.²⁸⁸ Information on GRs relating to supported activities must be made available to the FOEN on request.²⁸⁹

In cases of either intentional or negligent violation of the due diligence notification requirements, criminal measures may be applied with a fine of up to 100,000 CHF. The judge may also order publication of the judgment.²⁹⁰

Plant Treaty

Building on the 1998 Agriculture Law,²⁹¹ Switzerland implements the Plant Treaty through the Ordinance on the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture,²⁹² which entered

²⁷⁸ NagO at Art. 8; NCHA at Art. 23(q)(1).

²⁷⁹ NagO at Art. 8(1).

²⁸⁰ NagO at Art. 8(2).

²⁸¹ NagO at Arts 3(5) and 8(6).

²⁸² NagO at Art. 8(3).

²⁸³ NagO at Art. 8(4).

²⁸⁴ NagO at Art. 8(5).

²⁸⁵ NagO at Art. 8(7).

²⁸⁶ NCHA at Art. 23q(2).

²⁸⁷ NagO at Art. 9(1).

²⁸⁸ NagO at Art. 9(2).

²⁸⁹ NagO at Art. 9(3).

²⁹⁰ NCHA at Art. 24(a)(2).

²⁹¹ *Loi du 29 avril 1998 sur l'agriculture*, SR 910.1.

²⁹² *Ordonnance du 28 octobre 2015 sur la conservation et l'utilisation durable de ressources phytogénétiques pour l'alimentation et l'agriculture*, SR 916.181. [PGRFA Ordinance]

into force on 1 January 2016. It regulates the role of the Swiss government in the conservation of PGRFA.²⁹³ Its scope is over the conservation and promotion of the sustainable utilization of PGRFA, access to PGRFA in the National PGRFA Genebank, and the sharing of benefits arising from their utilization.²⁹⁴

The Ordinance establishes that the Federal Office for Agriculture (OFAG) manages the national gene bank with the aims of conservation and sustainable use of PGRFA. This includes gene banks, conservation collections and in-situ conservation areas.²⁹⁵ It may assign the management of these gene banks, conservation collections and in-situ conservation areas to third parties if the third party can guarantee the long-term conservation of the PGRFA.²⁹⁶

The following PGRFA will be added to the national Genebank: varieties and land races obtained or bred in Switzerland, and varieties and land races or genotypes which were historically important at the national, regional or local level.²⁹⁷ PGRFA may only be added to the national Genebank when they can be made available to third parties in accordance with article 5 on access to PGRFA, and they are not covered by IPR.²⁹⁸ PGRFA which belong to physical or legal persons may be added to the national Genebank, on the condition that the owners wish to make them available in the MLS in accordance with Article 5.²⁹⁹

Material in the national Genebank is made available for research, breeding, development or elaboration of material for agricultural or food purposes on the basis of the MLS SMTA.³⁰⁰ If the material is used for other purposes, the OFAG will establish a contract for access to the national Genebank, which will take into account the monetary or non-monetary benefits which may result from the utilization of the material.³⁰¹ OFAG will use the benefits resulting from these contracts for the conservation and sustainable use of phyto-genetic resources.³⁰² In order to conserve a broad genetic diversity of PGRFA, OFAG may take the following measures: inventorying and monitoring of PGRFA; identification of PGRFA; restoration of PGRFA; ex situ conservation of PGRFA; and, regeneration and multiplication of PGRFA for their conservation.³⁰³ These measures can be delegated to third parties if they can prove that they possess the necessary technical knowledge.³⁰⁴

In regards to funding for in situ conservation, the following rules are prescribed. First, contributions may be granted to areas for in situ conservation on the condition that the natural genetic diversity of native vegetation is preserved, and the botanical composition of native vegetation is not significantly altered.³⁰⁵ The OFAG provides information on the possibilities to obtain funding for in situ conservation areas, and selects the areas based on the funding requests submitted.³⁰⁶ The selection of areas eligible for contributions is based on the

²⁹³ *Country Report on the implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture: Switzerland*, 05 December 2016, online: <http://www.fao.org/3/a-br414e.pdf>.

²⁹⁴ PGRFA Ordinance at Art. 1.

²⁹⁵ PGRFA Ordinance at Art. 3(1).

²⁹⁶ PGRFA Ordinance at Art. 3(2).

²⁹⁷ PGRFA Ordinance at Art. 4(1).

²⁹⁸ PGRFA Ordinance at Art. 4(2).

²⁹⁹ PGRFA Ordinance at Art. 4(3).

³⁰⁰ PGRFA Ordinance at Art. 5(1).

³⁰¹ PGRFA Ordinance at Art. 5(2).

³⁰² PGRFA Ordinance at Art. 5(3).

³⁰³ PGRFA Ordinance at Art. 6(1).

³⁰⁴ PGRFA Ordinance at Art. 6(2).

³⁰⁵ PGRFA Ordinance at Art. 6a(1).

³⁰⁶ PGRFA Ordinance at Art. 6a(2).

botanical composition of native vegetation, the mode of exploitation of the area, the geographical distribution of all areas subject to a request for contributions, and the national objective in terms of area in hectares.³⁰⁷

Operators are eligible for contributions for in situ conservation if they: fulfill the relevant technical and environmental requirements found in the Ordinance on Direct Payments for Agriculture (OPD),³⁰⁸ consent to the addition of their operating surfaces to the National PGRFA Genebank, and grant access to the National PGRFA Genebank.³⁰⁹ A contribution of 450 CHF per hectare per year is awarded if the operating objectives are met.³¹⁰ The procedure for monitoring compliance with the operating objectives and for the payment of contributions is the responsibility of the cantons and is based on the provisions of Title 3 of the OPD.³¹¹

Contributions are also available for projects that support the sustainable use of PGRFA. Projects aimed at the targeted use of a large genetic diversity of PGRFA can be encouraged through limited contributions over time, provided that the projects contribute to a varied, innovative or sustainable production based on varieties adapted to local conditions, and provide for one of the following measures: in-depth descriptions of PGRFA in order to assess their potential use; the provision of healthy basic propagating material; or, further development and selection of varieties that meet the needs of niche production and are not intended for large-scale cultivation.³¹² The OFAG can also support projects such as exhibition gardens, awareness raising programs, and publications and conferences to raise public awareness conferences, through time limited contributions.³¹³ These types of projects can only be supported if their financing is primarily based on the proponent's own funds and third-party funds.³¹⁴

The OFAG manages an online public database in which data relevant to phylogenetic resources in the national Genebank and information on projects that have been supported. It collaborates with the users of other information systems that contain pertinent and relevant thematic information.³¹⁵ OFAG can develop concepts, strategies and other foundational documents necessary or useful for the conservation and sustainable use of phylogenetic resources.³¹⁶ It also encourages collaboration in national and international plans in the field of PGRFA.³¹⁷

UPOV Convention

Switzerland became Party to the 1991 UPOV Convention in 2008. It implements the UPOV Convention through the Federal Law on the Protection of New Plant Varieties³¹⁸ and the Ordinance on the Protection of New Varieties of Plants³¹⁹ (PVP Ordinance). The Federal Law indicates the following in relation to the farmer's privilege: "Farmers who have acquired propagating material from a protected agricultural variety put in circulation by the holder or with his consent may, on their holdings, propagate the harvested material they have obtained by growing such material."³²⁰ This is subject to regulation by the Federal Council, which "shall

³⁰⁷ PGRFA Ordinance at Art. 6a(3).

³⁰⁸ *Ordonnance du 23 octobre 2013 sur les paiements directs versés dans l'agriculture*, RS 910.13.

³⁰⁹ PGRFA Ordinance at Art. 6a(4).

³¹⁰ PGRFA Ordinance at Art. 6a(6) and (7).

³¹¹ PGRFA Ordinance at Art. 6a(8).

³¹² PGRFA Ordinance at Art. 7(1).

³¹³ PGRFA Ordinance at Art. 7(2).

³¹⁴ PGRFA Ordinance at Art. 7(3).

³¹⁵ PGRFA Ordinance at Art. 9(1).

³¹⁶ PGRFA Ordinance at Art. 9(2).

³¹⁷ PGRFA Ordinance at Art. 9(3).

³¹⁸ *Loi fédérale du 20 mars 1975 sur la protection des obtentions végétales*, RS 232.16 [Swiss PVP Law]

³¹⁹ *Ordonnance du 25 juin 2008 sur la protection des obtentions végétales*, RS 232.161. [Swiss PVP Ordinance]

³²⁰ Swiss PVP Law at Art. 7(1).

determine the plant species to which the farmer's privilege shall apply; in so doing, it shall give special consideration to their importance as raw materials for foodstuffs or fodder."³²¹

The PVP Ordinance regulates the procedure for the protection of new varieties of plants, the list of species to which the farmer's privilege applies, and the fees for protection.³²² Annex I to the Ordinance lists the species to which the farmer's privilege applies.³²³ These largely reproduce the exemptions from the European Community Regulation on Plant Variety Protection but also include additional lupin forage species. The species are: Turnip Rape (*Brassica rapa* L. (*partim*)); Chickpea Milkvech (*Cicer arietum* L.); White Lupin (*Lupinus albus* L.); Blue Lupin (*Lupinus angustifolius* L.); Yellow Lupin (*Lupinus luteus* L.); Lucerne (*Medicago sativa* L.); Field Pea (*Pisum sativum* L. (*partim*)); Egyptian Clover (*Örjfolium alexandrinum* L.); Persian clover (*Örifoliuò resupinatum* L.); Field bean (*Vicia faba*); Common Vetch (*Vicia sativa* L.); Oats (*Avena sativa*); Barley (*Hordeum vulgare* L.); Rice (*Oryza sativa* L.); Canary Grass (*Phalaris canariensis* L.); Rye (*Secale cereale* L.); Triticale (*X Triticosecale Wittm.*); Wheat (*Triticum aestivum* L. *emend Fiori et Paol.*); Durum wheat (*Triticum durum* Desf); Spelt wheat (*Triticum spelta* L.); Potatoes (*Solanum tuberosum*); Swede rape (*Brassica napus* L. (*partim*)); and, Linseed (*Linum usitatissimum*). This is in keeping with the outcomes of the UPOV Diplomatic Conference, which aimed at providing farmers' rights to crops that were traditionally used.

IX. CONCLUSIONS

The number of different agreements dealing with plants and PGR have created a range of differing and sometimes competing interests related to plants, PGR and people, including the conservation of biodiversity, farmers' rights and practices, and food security and food sovereignty.³²⁴ As modern crops become increasingly more homogenous,³²⁵ breeders are finding it important to return to earlier varieties and crop wild relatives for the genetic variations necessary for the development of improved varieties.³²⁶ Some of these genetic resources are available through the MLS, but a number are only available on farmers' fields, and several plants significant to food supplies globally are not included in Annex I, such as sugar cane, soybean, and nuts.³²⁷ Several countries that are important centres of origin are not members of the Plant Treaty, but are members of the Nagoya Protocol and UPOV Convention, such as China and Mexico. This means that access to PGRFA from these countries is a priori subject to Nagoya Protocol ABS requirements.³²⁸

There is no inherent conflict between the three treaties at the international level as they each establish distinct but related legal regimes that cover different subjects. Parties to the three treaties are bound by the general rules of international law, such as the norm of *pacta sunt servanda*, or that "every treaty in force is binding upon the parties to it and must be performed by them in good faith."³²⁹ The general rule of interpretation is that "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of

³²¹ Swiss PVP Law at Art. 7(2).

³²² Swiss PVP Ordinance at Art. 1.

³²³ Swiss PVP Ordinance at Art. 10.

³²⁴ Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention*, p. 46.

³²⁵ C. K. Khoury, A. D. Bjorkman, H. Dempewolf, J. Ramirez-Villegas, L. Guarino, A. Jarvis, L. H. Rieseberg, and P. C. Struik, 'Increasing homogeneity in global food supplies and the implications for food security' (2014) 111 *PNAS* 4001–6.

³²⁶ Janis, Jervis, and Peet, *Intellectual property law of plants*, para. 2.06.

³²⁷ Khoury, Bjorkman, Dempewolf, Ramirez-Villegas, Guarino, Jarvis, Rieseberg, and Struik, 'Increasing homogeneity in global food supplies and the implications for food security', 4004.

³²⁸ See e.g. A. Quinton 'Indigenous Mexican Variety of Corn Captures the Nitrogen It Needs From the Air' 7 August 2018, online: <https://caes.ucdavis.edu/news/articles/2018/august/indigenous-mexican-variety-of-corn-captures-the-nitrogen-it-needs-from-the-air>, where access is covered by ABSCH-IRCC-MX-207343-3.

³²⁹ *Vienna Convention on the Law of Treaties* at Art. 26.

the treaty in their context and in the light of its object and purpose.”³³⁰ In regards to the application of subsequent treaties relating to the same subject matter, interpretation should take into account the rule that “[w]hen a treaty specifies that it is subject to, or that it is not to be considered as incompatible with, an earlier or later treaty, the provisions of that other treaty prevail.”³³¹ To confirm the interpretation of the treaty, or where the meaning of the treaty is ambiguous or obscure, States can rely upon “supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion.”³³² This could, for example, include the Diplomatic Conference leading to the adoption of the 1991 Act of the UPOV Convention, or the Nairobi Final Act adopting the CBD.

Since there is no conflict between the agreements at the international level, implementation at the national (or regional) level will determine the level of compatibility and mutual supportiveness. A rigid implementation of the UPOV Convention at the national level could undermine the objectives of the Nagoya Protocol and of the Plant Treaty. Similarly, a rigid application of the Nagoya Protocol could undermine the objectives of the UPOV Convention. One commentator has noted that “rules of international law with the strongest measures for implementation and clearest obligations might easily become the strongest legal system in domestic law, *unless the areas of overlap between different treaties are properly analysed and addressed in the implementation process*. By doing so, [S]tates can effectively expand their policy space and ensure more consistent implementation.”³³³ Since the measures and obligations found in the UPOV Convention are stronger and clearer than those found in the Nagoya Protocol or Plant Treaty, it is important for States and regional organizations to reflect carefully to ensure a proper balance in implementation.

In reflecting upon the question of compatibility and mutual supportiveness, it may be valuable to use the sustainable development law principle of integration and interrelationship.³³⁴ In regards to this principle, the 1995 Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development indicated that “the principle of interrelationship and integration forms the backbone of sustainable development”³³⁵ and that “[i]nternational law, as well as national law, contribute to sustainable development to the extent that the respective rules are applied in a comprehensive and holistic way. Law-making and interpretation of laws at the domestic and international levels requires coordination among all relevant actors and interests.”³³⁶ This does not mean subsuming any particular legal regime to another, but rather “the respect of each legal domain for the scope and content of adjacent bodies of law.”³³⁷

A window for a synergistic and mutually reinforcing implementation of the three regimes to serve or advance the objectives of ABS thus lies at the national level, where countries are free to craft balanced and detailed provisions on farmers' rights. Furthermore, States can support the development of rules on ABS that accommodate the rights of breeders, TK holders, farmers and even patent holders in as fair and balanced a

³³⁰ *Vienna Convention on the Law of Treaties* at Art. 31(1).

³³¹ *Vienna Convention on the Law of Treaties* at Art. 30(2).

³³² *Vienna Convention on the Law of Treaties* at Art. 32.

³³³ A Christinck and MW Tvedt, *The UPOV Convention, Farmers' Rights and Human Rights: An Integrated Assessment of Potentially Conflicting Legal Frameworks* (GIZ, 2015).

³³⁴ See International Law Association, ‘ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development’ (2002) 2 *International Environmental Agreements: Politics, Law and Economics* 211–216, Principle 7.

³³⁵ United Nations Commission on Sustainable Development, *Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development, 26-28 September 1995, Geneva, Switzerland*, Background Paper for the Fourth Session of the Commission on Sustainable Development, 18 April - 3 May 1996, para. 15.

³³⁶ *Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development*, para. 18.

³³⁷ *Report of the Expert Group Meeting on Identification of Principles of International Law for Sustainable Development*, para. 13.

way as possible, with the ultimate aim to advance biodiversity conservation, protect and conserve PGRFA, and support PVP in fairness to other rights such as farmers' rights.

The closest links between UPOV and the CBD and Nagoya Protocol for advancing ABS are the farmer's privilege and breeder's exemption. Sui generis PVP systems adopted outside of the UPOV Convention framework – as permitted by TRIPS – may provide a way to better balance rights and obligations relating to the Nagoya Protocol, Plant Treaty, and PVP. However, this could be disadvantageous due to a proliferation of different national sui generis systems outside of UPOV, which would undermine international harmonization, reduce the possibility for capacity building, increase the burden placed on breeders that must deal with a variety of different systems, etc. As such, it may be necessary to consider amending UPOV to strike a better balance between the three treaties in a way that attracts greater membership. UPOV 1991 was adopted prior to the CBD, Nagoya Protocol or the Plant Treaty, and the latter three have a greater number of Parties. Where the regimes must be reconciled/implemented in synergistic or mutually re-enforcing ways at the national level, the countries with obligations in regard to GRs including PGRFA will need to be mindful of those obligations when implementing their UPOV commitments.

Evolving technologies have also become a subject of intense discussion in the context of the UPOV Convention, Nagoya Protocol and Plant Treaty under the subject of digital sequence information. The relevant resolution of from COP 14 of the CBD has noted that “the term ‘digital sequence information’ may not be the most appropriate term to refer to the various types of information on genetic resources, and that it is used as a placeholder until an alternative term is agreed.”³³⁸ Other terms that have been used for DSI to date include genetic sequence data, genetic sequence information, genetic information, dematerialized genetic resources, and *in silico* utilization.³³⁹ There remains a wide divide between Parties on whether DSI should be considered as being within the scope of the CBD and Nagoya Protocol, and this question is unlikely to be resolved before Parties agree on terminology so that the scope of coverage is clear. One particularly contentious issue pertains to benefit-sharing resulting from the utilization of DSI, but Parties have committed to working on resolving the divergence of opinions through a science- and policy-based process on DSI.³⁴⁰ COP 14 decided to establish an extended AHTEG to both compile and synthesize views and information on DSI submitted by Parties, other Governments, IPLC, relevant stakeholders and organizations, and to commission a series of studies on the concept and scope of DSI, ongoing developments on traceability of DSI, public and private databases of DSI, and domestic measures addressing DSI.³⁴¹ The outcomes of the AHTEG will be submitted to the open-ended intersessional working group to support the preparation of the post-2020 global biodiversity framework, in order for the open-ended working group to make recommendations to COP 15 on how to address DSI in the context of the post-2020 global biodiversity framework³⁴² and COP-MOP 4 to the Nagoya Protocol.³⁴³

The question of DSI also came up at GB7 of the Plant Treaty, which decided to initiate an information-gathering process by inviting “... Parties, other governments, relevant stakeholders and individuals with relevant expertise on the matter to provide information to the [GB] on, inter alia, terminology used in this area, actors involved with “digital sequence information” on [PGRFA], the types and extent of uses of “digital

³³⁸ CBD COP Decision 14/20 *Digital sequence information on genetic resources*, UN Doc. UNEP/CBD/COP/DEC/14/20, preamble.

³³⁹ *Multi-Year Programme of Work of the Governing Body of the International Treaty*, Resolution 13/2017, FAO Doc. IT/GB-7/17/Res13, footnote 1.

³⁴⁰ *Digital sequence information on genetic resources*, para. 6.

³⁴¹ *Digital sequence information on genetic resources*, para. 11(a)-(e).

³⁴² *Digital sequence information on genetic resources*, para. 11(f)(4).

³⁴³ Nagoya Protocol COP-MOP Decision 3/12 *Digital sequence information on genetic resources*, UN Doc. UNEP/CBD/NP/MOP/DEC/3/12, para. 3.

sequence information” on PGRFA, such as: i) characterization; ii) breeding and genetic improvement; iii) conservation; iv) identification of PGRFA; as well as on relevance of “digital sequence information” on PGRFA for food security and nutrition, in order to facilitate consideration by [GB8] of the potential implications of the use of “digital sequence information” on PGRFA for the objectives of the International Treaty, including exchange, access and the fair and equitable sharing of the benefits arising from their use”³⁴⁴ and to consider at GB8 “the potential implications of the use of [DSI on PGRFA] for the objectives of the International Treaty, including exchange, access and the fair and equitable sharing of the benefits arising from their use”.³⁴⁵

DSI are also impacting the functioning of the UPOV Convention. As technological development in the 21st century accelerates, IP law in general has struggled to keep pace.³⁴⁶ It has been argued that the legal concept of a plant variety in the UPOV Convention has become less well suited to deal with plant innovation, as the requirements for PVP (generally relating to physically observable characteristics or features) are less relevant because plant breeding has moved towards a genotypic approach which utilizes genetic modification and molecular breeding techniques that are based on the use of genetic data.³⁴⁷ The future role of PVP may thus “depend upon the willingness of government authorities and others to rethink its basic assumptions, and to consider responses that range from modest reforms to more ambitious structural changes.”³⁴⁸ Any future revisions of the UPOV Convention “will emerge from ongoing, open-ended and contingent engagement with scientific, legal, technical, political, social and institutional actors. In this way it is up to UPOV Members to set the agenda for UPOV, as well as the parameters around which future iterations of the UPOV Convention and its key concepts and practices will be shaped.”³⁴⁹ It is not clear that UPOV is in a position to remain static and unchanging through these dynamics.

³⁴⁴ *Multi-Year Programme of Work of the Governing Body of the International Treaty* at para. 4.

³⁴⁵ *Multi-Year Programme of Work of the Governing Body of the International Treaty* at para. 2.

³⁴⁶ Abbott, Cottier, and Gurry, *International Intellectual Property in an Integrated World Economy*, p. 1.

³⁴⁷ Sanderson, ‘Why UPOV is relevant, transparent and looking to the future: a conversation with Peter Button’, 616; M. D. Janis and S. Smith, ‘Technological Change and the Design of Plant Variety Protection Regimes’ (2007) 82 *Chicago-Kent Law Review* 1557–1618; D. Barabaschi, T. Alessandro, F. Desiderio, A. Volante, P. Vaccino, G. Valè, and L. Cattivell, ‘Next generation breeding’ (2016) 242 *Plant Science* 3–13.

³⁴⁸ Janis and Smith, ‘Technological Change and the Design of Plant Variety Protection Regimes’, 1560.

³⁴⁹ Sanderson, *Plants, People and Practices: The Nature and History of the UPOV Convention*, p. 267.

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Annex I: Parties to Nagoya Protocol, Plant Treaty and UPOV Convention (28 January 2018)

