THE IMPLICATIONS OF THE EXISITNG INTERNATIONAL ENVIRONMENTAL REGULATORY REGIMES OF ACCESS TO AND BENEFIT SHARING OF PLANT GENETIC RESOURCES*

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Abstract

The implications of the regulatory regimes of access to and benefit sharing ("ABS") of plant genetic resources ("PGRs") under international legal instruments ("ILIs") on biodiversity are principally made by the mechanisms under the regimes. Aiming to regulate PGRs, such mechanisms rely on intellectual property rights ("IPRs") with understanding that IPRs can solve the problem regarding ABS of PGRs. Paradoxically, it is such mechanisms that barricade equal access to PGRs and prevent benefits from being fairly shared, eventually degrading biodiversity.

Evaluation of the ILIs demonstrates the tendency towards expanding coverage of legally entitled actors and accesses, however retaining the IPRs, and consequently, causing the regimes to be stringent in allowing equal and fair ABS of PGRs to take place. Thus, we must rebuild a regulatory regime sustaining biodiversity. The proposed mechanism is the bank of PGRs where states parties are entitled to access PGRs whereas benefits – access entitlements – can be traded.

Keywords: Access and Benefit Sharing ("ABS"), Plant Genetic Resources ("PGRs"), International Environmental Laws, Biodiversity, Environment

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* This article is summarized from the thesis as fulfillment of the Degree of Doctor of Laws at Faculty of Law, Thammasat University, 2017

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1. Introduction

When it comes to biodiversity of PGRs, it can be easy to overlook the real purpose of regulating PGRs. It is appealing to anyone to be caught within the bound of IPL, thus giving rise to the result opposite to reason why we establish the regulatory regimes of ABS of PGRs in the sense that is fair to all stakeholders and the environment. Although there could be many causes of depletion of genetic resources, the primary ones are raising source use, habitat loss, degradation and fragmentation, introduction of non-native species and sales of decorative plants. All of these can be instead derived from poorly managed or ineffective ABS of PGRs.

In this article shall evaluation of the regulatory regimes under certain ILIs be carried out so that one can comprehend how the PGRs have been positioned in the common space. As such, the implications made by all these regimes at the international level can be analysed as to how the international regulatory regimes affect the situation of PGRs.

2. Evaluation of the Existing International Regulatory Regimes of Access to and Benefit Sharing of Plant Genetic Resources

The ILIs related to ABS of PGRs are to be examined in terms of whether or not they effectively function and what legal implications they make on the international level; this is to determine whether or not they pose a problem to the international conservation of biodiversity.

As a global commons exploitation of agricultural productivity and other form of utilization of PGRs if done in a sustainable way can help them to be diverse and pervasive in many regions.[1] Genes are important in reproduction of all organisms. Lack of certain genes means lack of the

[1] Carolina Roa-Rodriguez and Thom van Dooran, 'Shifting Common Spaces of Plant Genetic Resources in the International Regulation of Property' (2008) 11 The Journal of World Intellectual Property 176-202

organisms whose genes are their prototypes for their offspring. Lack of such births of the certain organisms subsequently brings about lack of certain organisms whose functions in the ecosystem are stopped, possibly causing several drawbacks to the environment. Therefore, availability of plant genetic diversity is crucial in order to make a variety of plants come into being; by this, sustainable protection of the environment can be ensured. Otherwise, organisms including human beings who rely on genetic diversity as the provider of food and habitats for the other organisms will be endangered and even extinct. One way to ensure existence of plant genetic diversity is that PGRs have to be accessed to and benefits from utilisation of them have to be shared among actors.

With realisation of importance of genetic diversity as such, many ILIs have been established; each of which has its own way of maintaining the diversity, indeed, they design different regimes regulating all the stakeholders.

The reason behind PGRs in jeopardy has been traced back since farmers and breeders collected seeds for use of both their physical properties and germplasm. PGRs have never been excluded from the tragic overuse.[2] Such term comes into its being due to a high variety of activities and productivities concerning exploitation of limited and unfair access to and benefit sharing of PGRs and this high volatility exists in the common space. The term “common space” means availability of resources which, when looking at the following regimes, cannot escape the state of interlocking, made by volatile appropriation motivated by commercial and agricultural interests supported by the ILIs themselves, unexpectedly culminating in limiting conservation of PGRs as the author shall now elaborate on this legal interplay on this common space.

[2] Hardin G, ‘The Tragedy of the Commons’ (1968) 162(3859) Science 1243

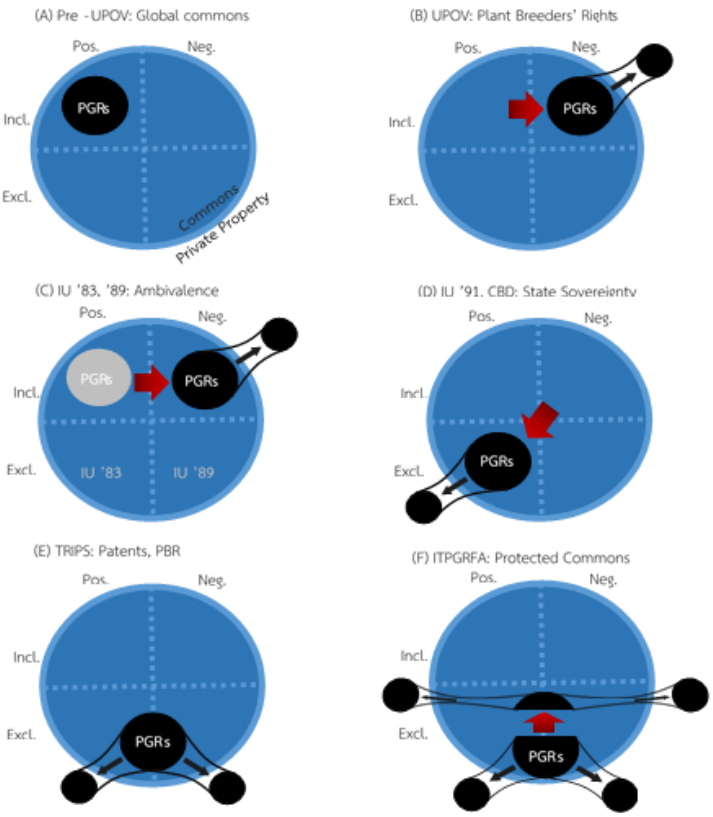
2.1 The International Union for the Protection of New Varieties of Plants established by International Convention for the Protection of New Plant Varieties 1961: A Good Start?

To realise the interlocking common space of PGRs as common property at the international level to which many stakeholders intend to access in order to possess and gain benefits arising from, we have to look through the development of ILIs on ABS of PGRs. In Figure 1 (A), the area labelled as *Commons Private* indicates PGRs being privately owned through IPL or any regulation allowing private appropriation; this is deemed as against biodiversity due to its being a possible barrier to ABS of PGRs. It has nevertheless to be noted that the *Positive* and *Inclusive* area of the common space indicates the area where PGRs has been in times of no regulations, therefore leaving chances of overexploiting PGRs – the problem making ILIs on ABS of PGRs established.

What comes up as the first international effort to regulate ABS of PGRs is the International Union for the Protection of New Varieties of Plants ("UPOV"), a regime established by the International Convention for the Protection of New Varieties of Plants with a legal personality as an independent intergovernmental organisation. UPOV's objective is to provide regulations on IPRs for PGRs – commonly known as plant breeders' rights ("PBRs")[3] This first regime requires domestic laws associated with plant variety protection ("PVP") to be enacted to implement it. For instance, Thailand enacts Plant Variety Protection Act B.E.2542 (PVPA B.E.2542); whereas, USA Plant Variety Protection Act 1970. The success of the regulations under UPOV can be effectively achieved as long as these domestic plant variety protection laws ("PVPLs") work; in other words, the functioning of UPOV depends on domestic laws. This UPOV's regime however leaves two loopholes. The first one is it lacks preventive tools in case certain states do not enact domestic laws. The second is it lacks a comprehensive system; indeed, it does not provide provisions in case of

[3] International Union for the Protection of New Varieties of Plants, art 14

incompliance and measures to correct any omission of implementation. The author moreover has the contention that the regime is only intended to protect the IPRs rather than observing the spirit of universal ABS of PGRs and conservation of biodiversity, requiring more aspects and, importantly, more thorough compliance mechanisms than only IPRs.



Note: Incl. stands for Inclusive.
Excl. stands for Exclusive.
Pos. stands for Positive.
Neg. stands for Negative.
PGRs stands for Plant Genetic Resources
PBR stands for Plant Breeders' Rights
Commons Private stands for Private Appropriation of Plant Genetic Resources through Intellectual Property Law and the Laws Relevant.

Figure 1: The International Regulatory Regimes of Access to and Benefit Sharing of Plant Genetic Resources and their Positioning Plant Genetic Resources in the Common Space[4]

As to Figure 1, it is perceived that prior to establishment of UPOV, PGRs are truly common property because it is located in the *Positive* and *Inclusive* area (note "*PGRs*" in the top left of Figure 1(A) circle), meaning that PGRs are totally open (*Positive*) for actors to access to them – subject to exploitation and possession by all (*Inclusive)* and to benefit sharing from such utilisation.

In order to regulate PGRs, UPOV however controls access to and exploitation of them through requirements of states to enact their domestic PVPLs. Consequently, PGRs – previously universally available (*Positive*) – was no longer available due to PVPLs as a barrier. Figure 1 (B) shows that PGRs are moved to another area in the circle, indicating that they are *not* totally open for access (*Negative*) yet they can still be possessed for utilisation (*Inclusive*) which of course has to be done in accordance with PVPLs.

2.2 International Undertakings on Plant Genetic Resources 1983 and 1989

International Undertaking on Plant Genetic Resources ("IU") is initiated by the UN Food and Agriculture Organization ("FAO"). The positive tone of intention is found in IU, incorporating both UPOV and those aforementioned PVPLs for the purpose of food and agriculture. There are 2 IUs, one established in 1983 and another in 1989. The milestones established by IU 1983 are free and unencumbered mechanisms for conservation, research and development and breeding.[5] However, the principle of unencumbered availability of PGRs has to be based on mutual

[4] Worapoj Suebprasertkul, 'ASEAN Legal Framework for Equal Access to and Fair Benefit Sharing of Plant Genetic Resources in Southeast Asia through Establishment of the Gene Bank' (LLD thesis, Thammasat University 2017)

[5] International Undertaking on Plant Genetic Resources 1983, art 5

exchange and mutually agreed terms, indicating that the samples to be taken can vary and be prone to decline of sharing the samples, inevitably rendering IU a weak point. The second annex to IU was launched out in 1989 to solve the imbalance caused by PVPLs' system. Apart from solving the distinction between the raw and worked materials, such annex has not much proven its capacity as can be seen in that farmers' rights are merely rhetoric; they are invoked without being protected by any feasible legal mechanisms. The third annex came in 1991 only to put the unsteady conception of commons property equally and exclusively shared, bringing the legal regime on the brink of contradiction. Notably, the third annex conceptualises that PGRs, with referral to that applied under UPOV, has admittedly to be subject to state sovereignty. Inspiring 113 states to adopt its key principles, IU is soft law, thus, not legally binding. Although IU's soft law characteristics play a crucial role, IU provides weak implications since its regulatory regime cannot be fruitful to the whole regimes. This viewpoint is supported by gradual progression to the subsequent legal arenas, once tarnished by establishment under IU.

With regard to IU 1983, Figure 1 (C) illustrates that *PGRs* are located in the *Inclusive* and *Positive* area on the left-hand side of the circle labelled with IU'83, where appropriation is more universal, meaning that everyone gains access to PGRs. Apparently, this is not different from the situation in the period prior to UPOV. IU 1989 has an effect similar to that of UPOV; *PGRs* are moved to the area of the circle labelled as "*Inclusive Negative,*" meaning that PGRs can be accessed with limitation (*Negative*) yet possible for utilisation (*Inclusive*).

2.3 Convention on Biological Diversity 1993, Nagoya Protocol and Cartagena Protocol: A Complete System but State Sovereignty?

CBD stands out from UNEP and the other METs in its attempts to be the most comprehensive legal instrument. Nevertheless, it has been criticized for its lack of compliance mechanisms. A bigger perspective sheds the light on that CBD – the pinnacle of ILIs for biodiversity conservation –

poses a problem. CBD has been faced with the mounting loss of biodiversity, so evident that the states parties to the CBD held the conference, culminating in the resolution in the 2002 decision to declare 2010 as the target date for reversing biodiversity loss.[6] The international concern about biodiversity loss moreover gave rise to the statement similar in spirit to that of the states parties to the CBD in the 2002 World Summit on Sustainable Development ("WSSD") that in ascendance to WSSD, it is accepted by almost actors that the Rio agreements had not been effectively implemented. Thus, WSSD, as taken by every actor, was to be about implementation.

Certain scholars propose that it is not always due to weak implementation and compliance that attribute to biodiversity loss. The real attribution is lack of international consensus to protect the global biodiversity; this may lead us to constitute METs which are not however implementable and non-compliable. Thus, the whole regimes, CBD in particular, does not err at the point of means of sates' compliance with CBD and the other ILIs. Instead, it is the METs, including CBD, themselves, not their enforcement protocols coming later, that are weak right from their beginning. We thus can propose that there are, in actuality, defects along the legal process, commencing with the treaty-making consensus of the states – tainted with un-wholeheartedly commitment of the law. Subsequently, the treaties offer us non-compliable mechanisms and eventually lead several states to ineffective implementation, or in the worst case, non-compliance. The extreme contentment is that the approach of conventional international law has not been workable and truly not work.[7]

Nevertheless, compared to the previous ones, the regulatory regime under CBD is more successful. In 1992, the concept of equitable use of genetic resources is guaranteed as under one of the two key CBD principles;

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[6] Report of the Sixth Meeting of the Conference of the Parties to the Convention on Biological Diversity (Decision VI/26 UN Document) para 11

[7] John Charles Kunich, 'Losing Nemo, The Mass Extinction Now Threatening the World's Hotspots' (2005) 30 I Columbia Journal of Environmental Law 9

whilst, the other concept under this key principle is sustainable use of genetic resources and the other key CBD principle is conservation of genetic resources. Deemed as broader than its predecessors, CBD goes beyond PGRs to include genetic resources of all organisms under its protection. CBD does not cancel the existing IPRs but makes certain supplementary requirements. PGRs can be privately appropriated but such enclosure has to be subject to its mechanisms by bringing in prior informed consent and the mutually agreed terms. Negotiation irrefutably comes into play between whosoever in need of PGRs and the state possessing certain PGRs. Negotiation has to be done in order that the actor needing the PGRs and the owner state can reach for the agreed terms of benefit sharing. Put simply, they have to negotiate how many benefits from utilisation of the PGRs can be regarded as equitable in return, resulting in the problems involved with determination of, firstly, what constitutes the adequate number in return, and secondly, whom the benefits should be granted to; and lastly, what form it should take.

Another problem is that notwithstanding CBD's standing for its broad protection, the weakness lies in its provisions bestowing states with authority to determine access to resources. This could be a barrier to convenient negotiation especially in the case where those owner states have more bargaining power. Whether or not they will permit the others to gain benefits and how benefits from utilisation of the PGRs accessed can be shared are the questions left as the outcome is subject to mutual consent required.

To picture this problem, Figure 1 (D) illustrates that the progression of PGRs moves from the negative side of the common space to the positive one, meaning that it shuts down some paths to use PGRs by appropriation of PGRs through IPRs (*Exclusive*) despite the open channel of modified PGRs. In other words, CBD undermines free appropriation, i.e. IPRs, providing access open to a wider group (*Positive*) notwithstanding most members of such wider group being states. Yet CBD requires consent prior to access and subordination to the owner states' sovereignty *(Exclusive*). What to be

borne in mind is that it is state sovereignty to be exercised by the owner state in question for consideration of its consent.

Notably, that CBD's regime moves into the exclusive area means that it is open for *nation sates* to gain access to PGRs, thus indicating that state sovereignty is to be deployed by states in discretion for granting access. Most likely is that it must be tempting for them to grant access to specific groups, i.e. certain states; whereas, individuals find it harder to gain access. It cannot thus be said in any other way but biodiversity conservation under CBD is, more or less, subject to politics.

In conclusion, despite undermining free appropriation, CBD allows the green light for states' discretion to be exercised under the sovereignty principle. This however can be regarded as threat for diversity of PGRs. The legacy that CBD bequeaths to the international regimes is another troublesome one, inevitably leading us to doubt of CBD's intention of opening equal access. We are forced to conclude that despite good contributions CBD has brought about, the question of whether or not PGRs can be accessed to and shared by all, whilst simultaneously conserved under CBD is legitimate to raise.

2.4 Agreement on Trade-Related Aspects of Intellectual Property Rights 1995

Extending its protection to cover genetic-resource based inventions,[8] Agreement on Trade-Related Aspects of Intellectual Property Rights 1995 ("TRIPS") provides us with protection of PGRs through patent and sui generis systems under its Article 27. Within World Trade Organization ("WTO"), the member states are to establish within their territories either the patent or sui generis systems or both combined. Thailand, for instance, observes TRIPS by constituting both systems. TRIPS does not lend full support to positive

[8] Koo, B., Nottenburg, C. and Pardey, P.G., 'Plants and Intellectual Property: An International Appraisal' (2004) 306(5700) Science 1295

exclusiveness of PGRs in the common space as CBD does,[9] consequently resulting in PGRs being open for appropriation by IPRs, meaning that the regulation of TRIPS allows IPL to bar a wider group from access to PGRs.

Moreover, instead of supplementing CBD's system requiring prior consent and mutually agreed terms, TRIPS treat PGRs in another way; indeed, anyone can appropriate PGRs without consent from the owners of PGRs. Illustrated in Figure 1 (E), despite one half of *PGRs* located in the *Positive* area due to the sui generis system allowing domestic laws to help support positive access to PGRs (*Positive*), the other of *PGRs* is dragged into the *Negative* area. This is because PGRs are also subject to the other system (out of the two systems), i.e. the patent system, under which the barriers are made for actors to access PGRs; as a result, PGRs are not open for all (*Exclusive*). Under TRIPS does the sui generis system make positive an open-for-all access to PGRs; whereas, the patent system makes the negative one.

In short, under TRIPS, the international ABS of PGRs regimes see TRIPS putting another international regulatory regime into the contradictory realm where the regulatory regimes go against one another. Another thing is the problem caused by TRIPS vey much contradicts with CBD, positioning PGRs in the area of *Positive Exclusive;* whilst, TRIPS PGRs in the opposite to that of CBD, i.e. *Negative Exclusive*.[10] Notably, it has to be aware that TRIPS's protective system goes further than protection of merely PGRs to the extent that it includes other *non-selected* PGRs under its protection, regardless of whether or not the states of resources are states parties to ITPGRFA. It thus can be remarked that there are tensions between all these existing regulatory regimes of ABS of PGRs because of their differences in positioning access to PGRs.

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[9] Carolina Roa-Rodriguez and Thom van Dooran, 'Shifting Common Spaces of Plant Genetic Resources in the International Regulation of Property' (2008) 11 3 The Journal of World Intellectual Property 188

[10] Lekha Laxman and Abdul Haseeb Ansari, 'The Interface Between TRIPS and CBD: Effort Towards Harmonisation' (2012) 11.2012 Journal of International Trade Law and Policy 108

2.5 International Treaty of Plant Genetic Resources for Food and Agriculture 2004

The last entry is ITPGRFA, making easier exchange of seeds supporting the genetic diversity of crops and stimulating research – essential in agriculture development which results in food security. In a world where most countries depend upon crops originating elsewhere, ITPGRFA facilitates exchange and conservation of crop genetic resources amongst member states and sharing of benefits arising from utilisation.

ITPGRFA supports ABS of PGRs through the focus of PGRs utilised for food and agriculture, making possible a realistic sense since it is in food and agriculture where usefulness of PGRs is explicitly realised. This treaty combines the interests of farmers with IPRs which is usually involved with scientists and corporations. Essentially, ITPGRFA is meant to incorporate all the legal systems available in uniformity. Most striking of all its features is a Multilateral System of ABS of genetic resources – a compliance mechanism through storage of genes. As described in its Annex I, ITPGRFA lists the PGRs for food and agriculture where the stakeholders are expanded as never before with 35 food crops and 29 forage crops under the List of Crops covered under the Multilateral System. It channels another route to access apart from the one previously established by CBD where states are primary actors. Indeed, ITPGRFA provides two accesses to PGRs – the first, like CBD, *exclusive* one by states under the principle of sovereignty; and the second *inclusive* one where a broader group of actors are included within entitlement to gain access to PGRs. Interestingly, ITPGRFA also renews cooperation in research and development between the domestic and international levels.

With regard to IPRs, ITPGRFA nonetheless positions its standing in contrast with its predecessors. Article 12.3(d) of ITPGRFA[11] prohibits the recipients of PGRs through the Multilateral System from claiming any IPRs that limits other states from accessing PGRs regardless of the forms of

[11] International Treaty of Plant Genetic Resource for Food and Agriculture 2004, art 12

ITPGRFA,[12] including plant genetic parts or any components in the form received from the Multilateral System.[13] The terms "genetic parts or components" and "in the form received" are considered as ambiguous with no definition, thus prone to interpretation.[14] Such interpretation may be that prohibition does not include isolated and modified genetic resources, considered out of the received form; hence, they can be appropriated by means of IPL, indicating that it does not make any difference between ITPGRFA's Multilateral System and the other ILIs in terms of private appropriation without consent of other common owners.

Demonstrated in Figure 1 (F), *PGRs* is broken into two parts; one of which is the PGRs under the ITPGRFA's Multilateral System; whilst, the other the PGRs outside the Multilateral System or the rest of PGRs in the whole international regimes in a fragment pulled upwards. Additionally, that both parts are pulled to both sides horizontally is the indication that both the PGRs within the Multilateral System and those without which are simultaneously privately owned or negatively appropriated.

3. Conclusion and Recommendations

The path to ABS of PGRs, which is not too sensitive to ownership of PGRs and IPRs, may not be fully paved. All the regimes of ABS of PGRs are ineffective in terms of mechanisms in positioning PGRs in the positive and inclusive area within the common space. The first objective of establishment of all regulatory regimes is to regulate these PGRs as global commons property, hence, the role of the law. Yet we seem to have forgotten another side of such objective, that is, conservation of biodiversity. In fact, the mechanisms under the regimes having been constituted so far

[12] Christiane Gerstetter, 'The International Treaty on Plant Genetic Resources for Food and Agriculture within the Current Legal Regime Complex on Plant Genetic Resources' (2007) 10 3/4 The Journal of World Intellectual Property 264

[13] ibid 264

[14] ibid 264

care more about IPRs than the environment. It is therefore not surprising that ABS of PGRs is never positive and inclusive. This does not mean that law or regulatory regimes is not necessary, rather, the regulatory regimes must be designed in order to ensure biodiversity of PGRs and at the same time respect the rights equally entitled to all stakeholders. Taking into account IPRs and IPL, it is legitimate to build a regime where PGRs can be repositioned to the area where access to the PGRs is open for all at the appropriate level like when there was no law and benefit sharing can be conducted in the manner that supports both fair benefit allocation and biodiversity rather than merely monetary compensation for PGRs. This would ultimately keep sustainability of the environment.

Irrefutably, the ILIs on ABS of PGRs have shaped international ABS of PGRs; whereas, results of which is the implications which, as having been evaluated, *cannot* ensure equal and fair ABS of PGRs at the international level since all the regimes have not been capable of constituting a truly equal and fair conduct of ABS of PGRs. This is principally due to IPRs as the mechanisms equipped with the ILIs. A new approach to constitute a regime should be considered necessary to equip a regime with other systems like a gene bank where states can access PGRs on the condition of their initially providing PGRs to the bank and thus earning quotas accordingly. Meanwhile, the quotas can be redeemed as rights to access to PGRs later. The quota trading system may be of help as incentives and compliance measures without reliance on punitive ones.

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