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Abstract
The workability of a new treaty on plant genetic resources, adopted in 2002, is analysed. The pre-existing international legal regime that influenced its development and the treaty's place within that regime is considered.

Keywords
plant genetic resources, international law, biodiversity

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THE INTERNATIONAL UNDERTAKING ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE :

WILL THE PAPER BE WORTH THE TREES?

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INTRODUCTION

Conception of the International Undertaking

The *International Undertaking on Plant Genetic Resources for Food and Agriculture* 1983[i] (International Undertaking) is a close relative of the *Convention on Biological Diversity* 1992[ii] (CBD). It is has superficial family traits in common with the CBD but a very different personality. It was originally conceived in the time of free access to and free exchange of plant genetic resources for food and agriculture (PGRFA). Article 1 expresses the Objective of the Undertaking as follows:

> 'The Undertaking is based on the universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction'

Free access and exchange were premised on the global promotion of agricultural research, improvement of food production and enhancement of world food security. Most agricultural research was conducted by governmental research institutions and the result of this work was shared. It was a more naive and innocent world.

The International Undertaking has since grown up in a time of political turmoil for the exchange of plant genetic resources and has adapted to misfortune. Agricultural research became increasingly privatised in the 1980s, particularly in the USA. This trend continued in the 1990s in other developed countries as government agricultural research departments were required to produce commercial returns in order for much of their research to continue.

Usurping Sibling - The Convention on Biological Diversity

As a consequence of commercially driven agricultural research, strengthening of plant breeders' rights and of patents on plant genetic resources took place.[iii] Internationally, some developing country purchasers of agricultural research products found themselves obliged to pay for these products, when they did not have to before. Adding insult to their injury, was the knowledge that some of them had supplied the original raw PGRFA material of those products free of charge. Usually, as the originators of the genetic material, their farmers had also refined and improved it themselves, over

generations of breeding, and then handed it over for further research and development, without protecting it under any legal system of their own.[iv]

In response to this situation, only ten years after the free access regime of the International Undertaking was articulated, the rights of countries of origin to restrict the access of others to their native PGRFA were formally recognised. These rights were articulated in the form of state sovereign rights as set out in the Convention on Biological Diversity (CBD). Article 15.1 provides that:

> Recognising the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the national governments and is subject to national legislation.

The CBD clearly articulates positions on matters such as sovereign rights over and access to certain genetic resources, which are also addressed by the International Undertaking.[v] The CBD is a legally binding convention with 175 Parties,[vi] whereas the International Undertaking is a non-binding political commitment with the status of only a UN agency conference resolution.[vii] Accordingly, as between adherents to both instruments, the CBD superseded the International Undertaking in relation to matters they both covered.

INSTITUTIONAL SETTING

To be familiar with the character of the International Undertaking and its prospects following the coming into force of the CBD, it is essential to understand a little of the relevant work of the organisation which conceived and gave birth to it.

For over 50 years, the Food and Agriculture Organisation (FAO) of the United Nations, which is headquartered in Rome, Italy, has been the primary organisation carrying responsibility for global conservation of plant genetic resources for food and agriculture. The purpose of utilisation of PGRFA, "for food and agriculture" is difficult to delimit. Agricultural purposes might be interpreted to go beyond production of food, to include production of timber for shelter, natural fibres for clothes, organic oils for industry, herbs for pharmaceuticals, etc.[viii] Therefore, the scope of the FAO mandate is broad.

The FAO first addressed PGRFA as early as the opening meeting of its Committee on Agriculture in 1946. However, little action was taken in those early days.[ix] In 1957 the first specialised international newsletter on crop genetic resources was published. In 1961 a conference on plant genetics was held and the first International Technical Conference on Plant Genetic Resources was held in 1967. In 1968 a crop ecology unit was created and, a little later, the Plant Production and Protection Division became active in the area of plant genetic resource conservation.[x] The FAO held Second, Third and Fourth International Technical Conferences on PGRFA in 1973, 1981 and 1996. While the 1970s saw a great increase in global activity, much of it sidestepped the FAO, taking place in parallel developments outside the UN framework, mostly through national genebanks and botanic gardens. However, by the 1980s significant responsibility for coordinated international measures to stem the erosion of PGRFA came under the FAO fold and the FAO Global System on Plant Genetic Resources was established.

The FAO has gradually developed its Global System for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture, to promote the

conservation, availability and sustainable utilisation of PGRFA for present and future generations by the international sharing of the benefits and burdens. The system originally consisted of a legal framework (i.e the International Undertaking) and an inter-governmental forum (the Commission on Plant Genetic Resources).[xi] The Global System has since been extended to include Codes of Conduct and Guidelines in the legal framework, and to include cooperative networks for PGRFA conservation and delivery, an expanding information base on global holdings and erosion of PGRFA, and a global PGRFA management program. Some of the non-legal aspects of the Global System mentioned here will be briefly elaborated upon in the final sections of this paper.

Agreement	International Undertaking Codes of Conduct and Guidelines
Cooperation	Crop and Thematic Networks Ex Situ Network of Base Collections
Information	World Information and Early Warning System Report on State of the World's PGRFA
Action	Global Plan of Action International Funds and Financing Mechanisms

FAO Commission on Genetic Resources

The biennial peak FAO Conference established the Commission on Plant Genetic Resources in 1983.[xii] .[xiii] It is responsible for overseeing the Global System for PGRFA. In November 1995, the FAO Conference expanded the Commission's mandate to cover all genetic resources for food and agriculture, including forest, animal and fisheries genetic resources. Thus, it is now called the Commission on Genetic Resources for Food and Agriculture (CGRFA). It was instructed to take on the expanded mandate incrementally, commencing with animal genetic resources, as it completes outstanding tasks already on its agenda and in particular the revision of the International Undertaking.[xiv]

By **April 1999** the CGRFA had 161 member states.[xv] It is open to all FAO members and associate members and makes its decisions by consensus, although a 'one country, one vote' approach to decision making can be taken where necessary.[xvi] The CGRFA meets biennially and operates intersessionally through Intergovernmental Technical Working Groups. It spends most of its time serving as a political forum, debating issues of policy for PGRFA activities.[xvii]

The CGRFA Secretariat, located within the FAO Secretariat, is the expert body undertaking preparatory information collection, research, formulation and adoption of documents preliminary to CGRFA deliberation. Much of its work is orientated around information collection and redistribution. It is responsible for the periodic publication of a report on the state of erosion of the world's PGRFA; for providing early warning of major genetic erosion problems; for administering a global plan of action concerning the coordination of conservation of PGRFA; and for holding the FAO International Technical Conferences on PGRFA.[xviii]

Ex Situ PGRFA Collections

Conservation of PGRFA can be conceptually divided into in situ and ex situ conservation. In situ conservation efforts of wild and of crop species are referred to below in the context of the Convention on Biological Diversity.[xix] Ex situ conservation forms the principal subject of this discussion, as it is the CGRFA which is primarily responsible for international coordination of this work. Ex situ conservation takes place principally in botanic gardens and gene banks.

Botanic gardens are the single most important type of institution involved in ex situ conservation of non-agricultural plants. There are over 1,550 botanic gardens in the world, about 800 of which are currently active in plant conservation.[xx].[xxi] Their activities are coordinated at an international level by Botanic Gardens Conservation International.[xxii] Member gardens are encouraged to distribute and propagate species, especially endangered ones.[xxiii]

On the other hand, the principal method for ex situ conservation of crop species of PGRFA is through gene banks, which store plants in their dormant form, as seeds. Gene banks range in sophistication from carefully catalogued collections in climate controlled storage to poorly sorted bags held in humid barns.[xxiv] The most important tend to be public institutions such as dedicated international centres, national centres and public research institutes. Private collections can also play a role.[xxv]

The most prominent international gene banks are those in the network of International Agricultural Research Centres (IARCs) supported by the Consultative Group on International Agricultural Research (CGIAR). The IARC gene banks have an estimated 61,000 accessions in storage[xxvi] (which amounts to 16% of unduplicated worlds holdings[xxvii]) and the world's largest collection of genetic resources.[xxviii] Eighteen IARCs and 227 non-IARC gene banks in 99 countries now hold 90% or more of the known landraces for important commercial crops such as corn, oats and potatoes.

Most IARCs have specific local or regional responsibilities for germplasm conservation, with a few also collecting specific crops on a world-wide basis.[xxix] Located within the FAO in Rome, but constituted outside of the UN system, is the International Plant Genetics Resource Institute (IPGRI, formerly known as the International Board for Plant Genetic Resources). It was established in 1974 and is perhaps the most important of the IARCs. IPGRI coordinates the activities of the other IARCs and the establishment of regional centres for the conservation of PGRFA, as well as providing financial assistance for other non-CGIAR conservation facilities.[xxx]

The Washington-based CGIAR was established in 1971 by sponsoring agencies such as the Ford and Rockefeller funds[xxxi] to coordinate the work of research centres and to extend the scope, reach and effectiveness of agricultural research, promoting the 'green revolution'. The CGIAR is chaired by the World Bank and is structured as an informal association of donors, research centres and non-donor representatives from developing countries (where much of the research is carried out).[xxxii] Through the CGIAR, the 18 IARCs have a total annual budget of over $300 million. The CGIAR and IARC network is of central relevance to the management of PGRFA and, therefore, to the work of the CGRFA.[xxxiii]

THE INTERNATIONAL UNDERTAKING

The International Undertaking on Plant Genetic Resources was adopted, like the decision creating the CPGR, by the FAO Conference in 1983[xxxiv] and 113 states have adhered to it.[xxxv] Countries not adherents to the International Undertaking may still be members of the CGRFA and participate fully in its deliberations. Thus the United States, which is a member but not an adherent, plays an influential role in the CGRFA's International Undertaking renegotiations.[xxxvi]

The International Undertaking is aimed at ensuring that PGRFA, especially those species of present or future economic and social importance, are conserved, utilised and made available for plant breeding and other scientific purposes. It contains provisions dealing with the exploration and collection of PGRFA (Article 3), preservation, evaluation and documentation of PGRFA in situ and ex situ (Article 4), access to and availability of PGRFA (Article 5), international cooperation in conservation, exchange and plant breeding (Article 6), international coordination of genebank collections and information systems (Article 7), PGRFA conservation and management activities funding (Article 8), activities monitoring by the FAO (Article 9) and the maintenance of phytosanitary measures for plant protection (Article 10). Article 11 requires States to provide information to the FAO at yearly intervals on the measures that they have taken or propose to take to achieve the objectives of the Undertaking.

Unreconciled international interests have hampered implementation of the International Undertaking. These are, on one hand, the interests of the (mostly developing) countries which have a natural abundance of PGRFA and wish to maintain control over them, and, on the other hand, the interests of the (mostly developed) countries which have made capital investments in breeding or engineering PGRFA and wish to maintain control over their refined products.[xxxvii] It is ironic that, whilst seeking to restrict foreign access to its own holdings, each also desires unhindered free access to the others' holdings of PGRFA. The vague and non-binding nature of the International Undertaking and its lack of an enforcement mechanism have facilitated many of the provisions being simply ignored or breached. For example, establishment of an International Network under Article 7 has been slow and there has been no significant progress under Article 11 in setting up international fund for PGRFA conservation and management outside of existing FAO funds.

Therefore, a central focus in the implementation and renegotiations of the International Undertaking is on the terms of international access to PGRFA. Reduced to its most basic, the issue is on who gets what for how much? In diplomatic negotiations, this raises a series of questions: What is the scope of PGRFA covered? How is access facilitated to those PGRFA? How is the commercial benefit to be shared? For those originators of PGRFA who are traditional agricultural cultivators, are special arrangements (called "Farmers' Rights") to be made?

Provisions on Scope, Access, Benefit Sharing and Farmers' Rights

International Undertaking - Scope

In Article 2 of the International Undertaking, plant genetic resources are defined as the reproductive or vegetative propagating material of the following categories of plants:

i. Cultivated varieties (cultivars) in current use and newly Developed varieties;
ii. Obsolete cultivars;

iii. Primitive cultivars (land races);
iv. Wild and weed species, near relatives of cultivated varieties;
v. Special genetic stocks (including elite and current breeders' lines and mutants)

These five categories range from naturally occurring varieties ("wild" and "weed" species), through those that have been modified by traditional breeding practices at village level ("primitive" and "obsolete" cultivars), to modern cultivars, including even the refined species held by professional breeders, such as seed companies ("special genetic stocks"). This broad scope is part of what alarmed some developed country CPGR Members contemplating the free access principle,[xxxviii] as Article 2 appears to include the commercially valuable PGRFA produced by their agricultural research enterprises.

Although the five categories of PGRFA listed are within the scope of the International Undertaking only if they are used for food and agriculture, it is impossible *ab initio* to identify a PGRFA on the basis of what it can later be used for. One species may have several uses, including food, such as linseed oil used for food and industrial applications, coconut used for food and fibre, sugar used for food and fuel production, and garlic used for food and medicine.[xxxix] Even PGRFA for exclusively non-food uses, such as rubber, textiles, timber and ornamental flowers, are products of agriculture.[xl] Therefore, all PGRFA might be considered as included initially within the scope of the International Undertaking, to be excluded only by agreement of the CGRFA. For example, the CGRFA may agree to exclude forest PGRFA as these are better addressed by other fora which specialise in silviculture.

International Undertaking - Access

The Undertaking was originally based on the 'universally accepted' principle that PGRFA are part of the shared 'heritage of mankind' and 'should be available without restriction'.[xli] While 'heritage of mankind' is not defined, the Undertaking makes it clear that this means that the world's PGRFA should be "freely available" to all (although not necessarily free of charge). Article 5 on "Availability of Plant Genetic Resources" states:

> 'It will be the policy of adhering Governments and institutions having PGRFA under their control to allow access to samples of such resources, and to permit their export, where the resources have been requested for the purposes of scientific research, plant breeding or genetic resource conservation. The samples will be made available free of charge, on the basis of mutual exchange or on mutually agreed terms'.

In this original form, the Undertaking seems to imply that all genetic resources (including the refined lines of plant breeders in developed countries) are the property of all and should therefore be freely accessible. While most developing countries signed the Undertaking, many developed countries refused to sign since they felt that their commercial plant breeders could be prejudiced by the loss of property rights in the refined lines.[xlii] A balance of interests was needed, between exclusive property rights for modern commercial products, such as breeders' lines and genetically engineered products, and general access to traditional farmers' and wild varieties.

To deal, inter alia, with this need, three Resolutions were adopted unanimously at the FAO Conferences of 1989 and 1991 and added to the Undertaking as Annexes.[xliii] These

qualify the principle of PGRFA being common heritage in several ways, i.e. by: (1) asserting sovereign rights of countries over their PGRFA; (2) clarifying that free access does not necessarily mean free of charge; (3) limiting the benefit of free access to those adhering to the Undertaking; and (4) limiting the scope of free access to exclude breeder's lines and farmers' breeding material.

These developments recognised the differentiated situations of national laws concerning PGRFA in developed and developing countries. - There are substantial legal systems for protection of new plant breeds and biotechnologically engineered PGRFA in developed countries but not for traditional farmers' varieties and wild varieties in developing countries, where sovereign rights are the only tool for legal protection.[xliv] The new Annexes to the International Undertaking recognised the respective commercial interests and legal tools available to developed and developing countries. Consequently, several more States adhered to the International Undertaking.[xlv] However, some important countries still withhold their adherence, including the USA, Japan and Canada, as well as Brazil, China and Malaysia.[xlvi]

International Undertaking - Benefit Sharing

As indicated in the preceding paragraphs, Annex **[1]** to the International Undertaking recognises that free access does not necessarily mean free of charge but it also does not elaborate what that means. For example, a charge might be a small administrative fee or it might be a complex formula for sharing the benefits of commercial development of the PGRFA. Ultimately, the International Undertaking does not explicitly recognise or endorse the notion of genetic resource benefit sharing which is set out in the CBD.

International Undertaking - Farmers Rights

Farmers' Rights are set out in the Annexes to the International Undertaking. Resolution 4/89 recognises the '...enormous contribution that farmers of all regions have made to the conservation and development of plant genetic resources'. Resolution 5/89 defines their rights as '...arising from the past present and future contributions of farmers in conserving, improving and making available plant genetic resources, particularly those in the centres of origin/diversity...'.

Farmers' Rights are expressed to be for the common benefit of farmers and farming communities in all areas of the world and are to benefit them by ensuring the protection and conservation of PGRFA and by ensuring that farmers participate fully in the improved use of PGRFA through plant breeding and other scientific methods.[xlvii] In essence, Farmers' Rights are a collectively held benefit, notionally allocated to traditional farmers mostly in developing countries, in reward for their past work in the conservation and development of PGRFA.

Responsibility for administration of this common benefit is 'vested in the International Community, as trustee for present and future generations of farmers'[xlviii] and is to be implemented by it, in particular, through an International Fund for PGRFA monitored by the CGRFA.[xlix] Resolution 3/91 provides that the International Fund resources should be substantial, sustainable and based on principles of equity and transparency.[l] The emphasis of the work of the International Fund is to be on development of capacities in developing countries' PGRFA conservation and management.

Thus, Farmers' Rights are quite different to modern real, personal or intellectual property rights in that they do not allocate rights directly to individuals. It would be impossible to identify the individual farmers of all regions who hold the rights in

question, and that is not necessary as the "International Community" is designated as trustee of the rights for "past and future generations of farmers". Nor are they sovereign rights, as there is no according of rights to the State.[li] Superficially, farmers are the beneficiaries. Yet farmers are to benefit merely by ensured participation in the improved use of PGRFA through plant breeding and other scientific development. The ultimate benefit of the major implementation mechanism for Farmers' Rights, i.e. the International Fund, actually goes to PGRFA conservation, not to farmers.

COMPARISON OF CBD PROVISIONS

The CBD provisions on Scope, Access, Benefit Sharing and Traditional Communities contrast with comparable provisions of the International Undertaking at several levels. At a philosophical level, the CBD is oriented towards individual sovereign control over granting access to native PGRFA, rather than a common heritage approach. At a practical level, the CBD emphasises bilateral sharing of mutual benefits flowing from access, but lacks an implementation mechanism such as a fund. At a technical level, the scope of PGRFA covered is temporally different.

CBD - Scope

Article 15.3 of the CBD limits the scope of its provisions concerning access to genetic resources. It states that:

> For the purposes of this Convention, the genetic resources being provided by a Contracting Party...are only those that are provided by Contracting parties that are countries of origin of such resources or by the Parties that acquired the genetic resources in accordance with the Convention.

The CBD covers the removal of genetic resources[lii] from countries of origin subsequent to the CBD coming into force on 29 December 1993 but not prior. It also does not cover acquisition from countries that are not countries of origin and which are not, or at the time of removal were not, Parties to the convention. Most PGRFA which are held outside the country of origin, such as seeds in established genebanks and plants in botanical gardens,[liii] were acquired prior to the CBD coming into force for the country holding the ex situ collection.

In contrast, the International Undertaking has a broader temporal scope. It deals with access to PGRFA for food and agriculture, including pre-existing ex situ collections in genebanks and botanical gardens, irrespective of the coming into force of the CBD. Therefore, the International Undertaking seems to have broader application to PGRFA than the CBD, because its coverage of PGRFA is not time-limited. If its other provisions could be harmonised with the CBD, the International Undertaking could fill that CBD temporal hiatus in relation to PGRFA coverage.

Other than temporally, the coverage of subject matter under the International Undertaking appears more limited than the CBD. The International Undertaking applies to plant genetic resources only, whereas the CBD provisions important to the question of access apply to all genetic resources.[liv] Nevertheless, it must also be borne in mind that, while the PGRFA covered by the International Undertaking are notionally limited to those for "food" and "agriculture", those socio-economic purposes are open-ended unless agreed otherwise.[lv]

CBD - Access

The International Undertaking and the CBD deal with access to PGRFA in similar but divergent ways. Both provide for access on mutually agreed terms and both leave open the question of whether the terms should be agreed on a bilateral or multilateral basis. However, the emphasis in the International Undertaking is on multilateral solutions and international institutional mechanisms, while the Convention is geared more towards bilateral agreements.[lvi]

This divergence in emphasis concerning matters of access is evident in the CBD references to "each Contracting Party"[lvii] reaching "mutually agreed terms"[lviii] based on "prior informed consent".[lix] Accordingly, the Secretariat of the CBD has recorded the national access regimes put in place by each CBD Party to inform each other party of the process of negotiating bilateral access arrangements.[lx] In contrast, the International Undertaking mandates the creation of an International Network of coordinated genebank collections, which shall all facilitate access to PGRFA.

CBD - Benefit Sharing

The CBD requires the "sharing in a fair and equitable way [of] the results of research and development and the benefits arising from the commercial and other utilisation of genetic resources".[lxi] This fundamental position is supplemented by requirements for developing country "priority access on a fair and equitable basis" to biotechnologies "based upon" their genetic resources[lxii] and for the transfer of technology to developing countries for the conservation and sustainable use of biological diversity on "fair and most favourable" terms.[lxiii]

These CBD provisions are the products of hasty and unsatisfactory compromises between national interests, which remain unreconciled. Obfuscation has served instead of agreement and the provisions are far from clear in meaning or application. For example, when a plant product contains material from 20 different sources, which genetic resources is it "based on"? Further, it is questionable whether these benefit sharing provisions are capable of implementation in the real world of agricultural or biotechnological research and development. How is the component value of one of those 20 genetic inputs to be assessed as part of 10 years of research and development and who is to monitor the internal corporate paperwork?

Unlike the International Undertaking, the CBD makes no requirement that benefits flowing from the development of PGRFA be directed towards genetic resources conservation. For example, the country of origin can channel profits from commercial development shared with it into road building. Significantly, it is in provisions on sharing the benefits of access that the greatest divergence exists between the International Undertaking and the CBD. This is also an area in which the expertise of many of those organisations associated with the FAO and experienced in genetic resources transfers, research and development, have much to offer in assisting implementation of the CBD.

CBD - Traditional Communities

The CBD makes no reference to Farmers' Rights but does introduce the notion of equitable sharing of the benefits arising from utilisation of the technology of indigenous or local communities. Article 8(j) provides that

> Each Contracting Party shall, as far as possible and appropriate: Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous or local communities embodying traditional lifestyles

> relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices.

This provision, like those concerning Farmers' Rights of the International Undertaking Annexes, honours the role of traditional agriculturalists in the conservation of PGRFA (but also covers wider biological diversity). It then goes further, to recognise the importance of traditional knowledge, innovation and practices for other uses, implying such uses as in pharmacy and industry.

The CBD leaves the meaning and application of this provision to the broad discretion of each Contracting Party. Unlike the International Undertaking, it promotes individual national approaches to recognition of traditional agriculturalists. Each Contracting Party is to seek this objective in vague terms, being obliged merely to respect, preserve, maintain, promote and encourage. Even these obligations are qualified by phrasings such as "as far as possible and appropriate" and "subject to its national legislation".[lxiv] Thus, while the CBD emphasises the equitable sharing of benefits arising from the utilisation of traditional technologies, it offers no substantially binding provisions for the recognition of traditional agriculturalists contribution to the pool of PGRFA. Nor is it clear whether traditional communities or the State are to be entitled to equitably shared benefits. The CBD negotiators opted merely for a flexible general principle to guide the exercise of national discretions.

In contrast, the International Undertaking adopted a multilateral mechanism in the form of a fund. In further contrast, that fund is not designed primarily to reward traditional knowledge, innovation and practices leading to utilised benefits. Rather, it is to build capacity for improved PGRFA management and conservation.

REVISION OF THE INTERNATIONAL UNDERTAKING

To address the hiatus in the CBD concerning PGRFA collections acquired prior to the coming into force of the Convention, Resolution 3 of the 'Nairobi Final Act' was adopted at the Conference for the Adoption of the Agreed Text of the CBD[lxv]. This concerns the inter-relationship between the Convention and sustainable agriculture and requests that the inter-relationship be dealt with within the context of the FAO Global System for Plant Genetic Resources. It also requests that cooperation be sought between the Convention and the Global System.[lxvi]

In April 1993 a complementary resolution, agreed by the Commission on Plant Genetic Resources, called for the revision of the Undertaking. The CPGR agreed that the Undertaking should be made consistent with the CBD[lxvii] and noted that the FAO might, if requested, revise the Undertaking as a legally binding document that might take the form of a protocol to the Convention.[lxviii] This resolution was endorsed by the FAO biennial conference in November 1993.[lxix]

Negotiations commenced with inclusion in the body of the text of the International Undertaking of the three Annexes added to it in 1989 and 1991. This technical exercise, referred to by the CPGR Secretariat as Stage I of the Revision process, was simple and successful, as it did not need to address the substance of the Annexes.[lxx]

Further progress in Stage II of the revision effort has been slow and of limited success. Reasons for poor progress include the technical complexity of the issues, emotive political postures of some developing countries (e.g Malaysia) associated with their sovereign rights and predatory bioprospecting, the obstinate determination of some major developed countries (e.g Canada) to hold to the status quo and protect national commercial interests. Many States use their local representatives to the FAO - often with inadequate instructions from national capitals - to negotiate this complex, political instrument.[lxxi] Nevertheless, the Conference of Parties to the CBD has repeatedly reaffirmed its request to the FAO to continue its work on the matter.[lxxii] Revision negotiations have taken place through the CPGR/CGRFA at the following nine meetings held over six years:[lxxiii]

First CPGR Extraordinary Session	1994 November
Sixth CPGR Ordinary Session	1995 June
Second CGRFA Extraordinary Session	1996 April 22-27
Third CGRFA Extraordinary Session	1996 December 9-13
Seventh CGRFA Ordinary Session	1997 May 15-23
Fourth CGRFA Extraordinary Session	1997 December 1-5
Fifth CGRFA Extraordinary Session	1998 June 8-12
Informal meeting	1999 January 21-22
Eighth CGRFA Ordinary Session	1999 April 19-23

The negotiators always intended that a successfully revised International Undertaking should be a legally binding document, perhaps taking the form of a protocol to the CBD.[lxxiv] The draft revised draft text as considered at the Eighth Ordinary Session in 1999 is written in legally binding language and sets out its relationship with CBD. It provides that any Party that has not ratified the CBD (essentially the USA) shall be assumed to accept the provisions of the CBD that relate to matters covered by the revised International Undertaking.[lxxv]

Revision - Scope

From the start, negotiations on the scope of the revised International Undertaking became bogged down in definitional questions with little result to show. For example, should the scope exclude PGRFA collected prior to or after the coming into force of the CBD, or PGRFA cultivated for pharmaceutical, forestry or industrial purposes? Or should scope be confined to a list of PGRFA for foods?[lxxvi]

The 1997 Seventh Session of the CGRFA adopted negotiating text on scope. Draft Article 3 simply provides that "This Undertaking relates to plant genetic resources for food and agriculture."[lxxvii] The anodyne formulation leaves open for later refinement the difficult questions of whether some specific classes of PGRFA are to be excluded from the scope of the revised International Undertaking. As the details of its scope could be

returned to at a later stage without damage to the structure of the instrument, it seemed pragmatic to keep the scope broad open so that other issues could be addressed.

At the 1995 CPGR Sixth Regular Session the United States proposed that an agreed list of covered major food crops be adopted.[lxxviii] The notion of limiting the scope of the International Undertaking for certain purposes to only those major food crops agreed by the CGRFA has since gained credence. At the 1997 Seventh Session, the CGRFA refined that proposal by adopting it in relation to the access provisions of the International Undertaking.

Revision - Access

A majority of delegations to the 1997 Seventh Session agreed on the need for a multilateral access regime. Previously, major countries of origin of PGRFA, such as Brazil, had been holding out for bilateral terms of access to be negotiated on an ad hoc basis, presumably, anticipating that more favourable commercial terms could be achieved. A multilateral system, however, could have the advantages of facilitating efficient exchange of PGRFA. It could reduce transaction times and costs and provide an acceptable basis for specific and transparent negotiation of benefit sharing.

It was agreed that the scope of a facilitated multilateral access system (Multilateral System) would initially be limited to an agreed list of crops. The list would form Annex I to the International Undertaking and, to expand multilateral facilitation of access, it would be kept under review "with a view to extending its scope and ultimately achieving a more complete coverage of PGRFA".[lxxix] In effect, this means that the scope of genetic resources covered by functional provisions of the International Undertaking would vary, with only listed crops being subject to the Multilateral System.

Criteria for drawing up a list were discussed and it was agreed that interdependence and food security would be fundamental.[lxxx] An Indicative List of crops and forages, building on lists from two previous negotiation sessions and identifying crops by common name and genus, was circulated for comment.[lxxxi] The International Plant Genetic Resources Institute (IPGRI) was requested to prepare a technical study of which PGRFA should be included in Annex I, which it duly presented to the 1998 Fifth Extraordinary Session. It recommended using a genus-based classification system complemented by the genepool concept, which identifies inter-crossability of species and is therefore useful for identifying crop groups in accordance with their biological unity.[lxxxii]

Concerns at the 1997 Special Session, over whether to include the existing ex situ collections of gene banks, were addressed by deciding that the collections of members of the CGIAR would be included. This arrangement does not cover all IARC collections, some of which are national.[lxxxiii] Following deadlock in the Fifth CGRFA Extraordinary Session in 1998 over other access and key elements, the CGRFA Chair proposed a smaller informal meeting to further the negotiations. In January 1999 a 22 country group met, representative of the FAO regions although the individuals concerned met in their personal capacities. That meeting made dramatic progress and enabled a productive Eighth Ordinary Session in April 1999.

In relation to access, the informal meeting agreed that those listed PGRFA to which the Multilateral System would apply could be used only for research, breeding and/or training for food and agriculture.[lxxxiv] The meeting specifically excluded PGRFA for other uses, such as pharmaceutical, forestry, chemical or industrial applications, which would remain subject to bilateral, rather than multilateral, arrangements for access. For those

uses, the International Undertaking would offer no global regime building beyond the foundations laid in the CBD access provisions and the FAO International Code of Conduct for Plant Germplasm Collecting and Transfer.[lxxxv]

Many problems even within the limits of the proposed Multilateral System remain to be resolved, however. As a particular PGRFA may be used for both food and other uses, it would appear necessary to track the of any particular accessed material. An objective of the Multilateral System as currently described is to obviate the expense of tracking individual accessions. Tracking is also cumbersome, if not impossible.

It must be noted at this point that, in relation to ex situ collections only, a facilitated multilateral access system is already in place for a limited range of PGRFA. Article 7 of the International Undertaking requires the development of an international network bringing together base collections in genebanks under the auspices and/or jurisdiction of the FAO, to hold PGRFA for the benefit of the international community on the basis of unrestricted access. At its second session, held in 1985, the CPGR considered legal arrangements to establish the international network required under Article 7 and in 1988 the FAO invited the IARCs of CGIAR to place their collections under its auspices in an International Network.[lxxxvi] Twelve IARCs signed agreements with the FAO in 1994, placing some 500,000 accessions in the International Network. Those agreements were renewed in 1998, together with an additional series of tripartite agreements between FAO, IPGRI (on behalf of the International Coconut Genetic Resources Network), and those countries hosting the coconut genebanks. Thirty two countries have also expressed a willingness to place their national collections in the International Network but negotiation of further agreements with them are on hold while the International Undertaking is under renegotiation.[lxxxvii]

The bilateral agreements between the FAO and CGIAR IARCs follow a common template adopted to clarify ownership, obligations with respect to conservation of germplasm and its availability, and the policy role of the CGFRA.[lxxxviii] In relation to access to germplasm held by the IARCs, the bilateral agreements provide for designated germplasm to be distributed subject to Material Transfer Agreements (MTAs). Designated germplam is set out in a list (appended to each MTA) and comprises material (1) developed by the IARC; (2) acquired prior to the entry into force of the CBD; or (3) acquired after the entry into force of the CBD but on the understanding that it could be made freely available for agricultural research or breeding purposes.[lxxxix]

The terms of the MTAs provide that an IARC holds the germplasm as trustee for the world community and makes available the germplasm "as part of its policy of maximising the utilisation of genetic material for research". However, availability is subject to conditions intended to ensure that it is used for public benefit. Therefore, recipients are prohibited from taking out legal ownership or intellectual property rights over the "germplasm or related information" and are bound to ensure that any subsequent recipients to whom they transfer the material also do not. (Annex V Article 3(b) & Article 10)

The MTAs will not resolve all the problems in the proposed Multilateral System. As noted above, tracking the use of accessions would be prohibitively cumbersome and expensive. FAO and CGIAR have not provided for a tracking system but acknowledge that violations of MTAs may take place.[xc] In fact, violations have already been observed.[xci] In response to perceived violations, the organisations have agreed that the IARCs will voluntarily take actions including requesting an explanation, notifying the

responsible regulatory body in the relevant country that intellectual property rights may be inappropriate, notifying IPGRI and FAO, and even taking legal action.

The MTAs leave yet more gaps which a Multilateral System would need to fill. They do not cover unlisted crops, non-ACIAR holdings, or material accessed prior to the MTA being adopted in 1994 (or subsequent to the entry into force of the CBD, unless on the understanding of the donor that it is to be made freely available). They also do not address benefit sharing of the products of commercialised research and development.[xcii] Further, the purported trust status of IARC germplasm holdings is legally questionable. IARC genebanks do not possess sovereign immunity and are subject to the laws of the country of location. IARC legal constitutive documents tend not to make explicit provisions governing the ownership or trust status of the PGRFA held. Thus, if a country of location decides to restrict access to genebanks, the IARC is obliged to comply. The USA Government, for instance, has stated that any material so received would become national property and it has admitted that political considerations have dictated a USA policy of exclusion from access for a few countries.[xciii] Typically, if an IARC's existence is terminated, its assets (including plant genetic material) would become the property of the host national government.[xciv].[xcv] Finally, the MTAs provide only for voluntary responses to violations, perhaps reflecting the uncertain legal rights involved.

To be workable, the Multilateral System for designated ex situ germplasm will need simple administrative and technical procedures and minimal transaction costs. Yet, in many circumstances gaps in PGRFA coverage remain, legal uncertainty over the status of collections and the responsibilities of transferees prevails and the need, difficulty and expense of tracking of PGRFA is disregarded.

Revision - Benefit Sharing

A noted above, the International Undertaking did not recognise benefit sharing in its original conception. Design of a benefits distribution, in exchange for access, has all along been the critical issue underlying its revision and remains the fundamental and most difficult task ahead.

The 1997 Seventh Session enabled technical work to take place to design a system which shares benefits acceptably. Following progress in the 1999 Informal Meeting, the CGRFA Chair identified agreed elements on benefit sharing. The CGRFA Secretariat then drafted a Composite Negotiating Text incorporating the agreed elements on benefit sharing in Articles 14 and Annex III.

Article 14 provides that those benefits accruing from PGRFA accessed through the Multilateral System shall be shared through the transfer of technology, capacity building, exchange of information and funding, taking into account the CGRFA Global Plan of Action. These are all public benefits. Further, it is provided that these benefits should flow to developing country farmers embodying traditional lifestyles relevant for the conservation and sustainable utilisation of PGRFA, as well as through partnerships in research and technology and development. Article 14 also refers to benefits being shared in accordance with Annex III, (although the latter is as yet a blank page).

These provisions reflect that terms for PGRFA access have been agreed only for ex situ collections held under the CGIAR. Accordingly, as PGRFA in those ex situ collections cannot be legally subjected to private property rights, benefits flowing from their development are to be shared with a view to the common good.

On the other hand, sharing of the benefits flowing from access to PGRFA located in situ, or held in non-CGIAR collections, are simply not addressed by the proposed Multilateral System. Those PGRFA remain subject to bilateral arrangements for benefit sharing based upon CBD provisions. The competing negotiation positions concerning bilateral agreements are set out in the table below, digested from various rounds of CGRFA negotiations. It remains for the CGRFA to resolve the various negotiating positions into compromises appropriate to the circumstances of access and development.

PGRFA Supplier Positions	**PGRFA Receiver Positions**
Predictable terms • Conform to international standards, or • Subject to national legislation	*Predictable terms* • Conform to international standards 1. No national variables
Administrative costs • Simple administration, • Low cost • Paper trail to monitor	*Administrative costs* • Simple administration • Low cost 1. No paper trail
Facilitated access • Case by case permit, and • Declaration as to each use	*Facilitated access* • General exchange permit, or • Permit requirement for some uses only
Payment • For each access, or • For general access, or • For access resulting in commercialised product, or • Dependent on purpose, or • For maintaining in situ collections	*Payment* • Not for individual exchanges, but • For commercialised product only, or • Free access, or • Low cost access, or • Dependent on purpose
Technology Transfer • Information on PGRFA accessed, and • Local corporate operations development, and • Biotechnology research assistance, and • Breeding assistance	*TechnologyTransfer* • Information on PGRFA accessed, and • Ex and in situ conservation assistance • Generalised international benefit through market forces

It is possible that, if the Multilateral System proves workable, it could be extended in scope to include in situ and other germplasm not currently designated and be revised to address benefit sharing from development of that PGRFA. Such an achievement could increase the availability of PGRFA, simplify transactions, promote predictability and fairness in benefit sharing as well as direct some of the benefits towards PGRFA conservation, as does the current proposal for ex situ germplasm.[xcvi]

Revision – Traditional Communities and Farmers' Rights

There is a nexus to be made between benefit sharing and rewarding farmers. The complexities of CBD benefit sharing, however, heated and troubled the renegotiation of the International Undertaking's provisions on Farmers' Rights. For example, do Farmers' Rights generate a shared form of private property or intellectual property right and, if so, who represents and holds that right? Further, if Farmers' Rights are to result in specific benefits for farmers, questions arising include whether rewards should belong to individual farmers/farming communities or be held and distributed by States as trustees for them. Or, if the benefits associated with Farmers' Rights are to be of a generalised public nature, should distribution of these benefits be governed by national priorities and legislation or by international mechanisms?

The questions are complex and the responses varied. National positions in CGRFA negotiations have held one feature in common though, ie. disregard for the option of Farmers' Rights being held directly by farmers as a form of shared private or intellectual property. In fact, due to the difficulties in defining the holders of that property, this option is virtually impossible to give practical effect to.[xcvii]

National positions in CGRFA negotiations have tended to diverge along a North-South line, however, concerning the sharing of a more generalised collective benefit. The South has urged that the benefits belong to the State and are distributed at its discretion. This position tends to give control over benefits to States of the South, where small traditional farm lots are rich in agricultural diversity. The North has argued that control over distribution of benefits should rest with the broader international community, which could direct them towards PGRFA conservation through the forum of the CGRFA.

The latter position is linked to the Global Plan of Action, which could be financed through the fund for Farmers' Rights, already established at a nominal level by the International Undertaking. The fund would be invigorated a share of the commercial returns from PGRFA utilisation. It would redistribute the benefits back to developing countries in a manner ensuring that the benefits went to conservation and management in accordance with the Global Plan of Action, rather to national highways and power stations.[xcviii] Costings for the Global Plan of Action are and have been controversial, reflecting donor reluctance.

The most recent CGRFA meeting, the Eighth Ordinary Session in April 1999 adopted agreed draft text on Farmers' Rights. Draft Article 15 provides that :

> 15.2 The Parties agree that responsibility for realising Farmers' Rights, as they relate to PGRFA, rests with national governments. In accordance with their needs and priorities, each Party should, as appropriate, and subject to its national legislation, take measures to protect and promote Farmers' Rights including:
>
> (a) Protection of traditional knowledge relevant to PGRFA;[xcix]
> (b) The right to equitably participate in sharing benefits arising from the utilization of PGRFA;
> (c) The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA.

15.3 Nothing in this Article shall be interpreted to limit any right that farmers have to save, use, exchange and sell farm-saved seed and propagating material, subject to antional la and as appropriate.[c]

The language is internally inconsistent in that it describes four "rights" which are set in non-mandatory language ("each party should, as appropriate") and then are drastically qualified by each being made explicitly subject to national needs, priorities and legislation. Although the Article suggests a modest international program for the realisation of Farmers' Rights, all is left to the discretion of the State of origin. CGRFA consensus has moved towards the preferred position of the South.

A likely reason for the cave in by the North is a wish to avoid committing substantial new and additional funds to in situ, on-farm conservation in developing countries. Further funding for on-farm conservation in accordance with the Global Plan of Action could be demanded by the South as a result of any elevation of Farmers' Rights into a form of formal benefit sharing linked to the Global Plan. Unfortunately, the move is likely to block that channel to funds for PGRFA conservation.

RELATED DEVELOPMENTS IN THE GLOBAL SYSTEM

The International Undertaking exists within the Global System for the management of PGRFA. The non-legal aspects of the Global System are developing and strengthening at a pace which has outrun the pace of negotiations for revision of the Undertaking. Since the mandate for negotiation was given in 1993, the Global System has strengthened its information base for PGRFA management and has created a comprehensive management plan. It has also adopted various codes and guidelines relevant to PGRFA access and benefit sharing.

Code for Germplasm Collecting and Transfer

In April 1993, the CPGR endorsed an International Code of Conduct for Plant Germplasm Collecting and Transfer.[ci] This was presented to the 27th Session of the FAO Conference in November 1993 for final approval and adopted there.[cii] It is intended to facilitate bilateral negotiations for access to PGRFA found in situ, rather than access to ex situ collections as covered by the proposed Multilateral System.[ciii]

Like the International Undertaking, the Code aims to regulate the collection and transfer of PGRFA so as to facilitate access and sustainable utilisation and to prevent genetic erosion. It reiterates that nations have sovereign rights over their PGRFA, but also that PGRFA should be made readily available.[civ] It recognises the rights of local farming and indigenous communities to the PGRFA they maintain. At the same time, the Code re-emphasises the need to share the benefits derived from PGRFA between the source States and the collectors or users of germplasm. To this end, it suggests ways in which the collectors or users may pass on a share of the benefits to the donors, recognising the rights and needs of local communities and farmers.

Unlike the proposed Multilateral System under a revised International Undertaking, the Code is not legally binding. However, it includes reporting provisions to allow the CGRFA to monitor its implementation. In the case of non-observance by a collector of the principles of the Code or the rules and regulations of the host country, the host country can report the matter to the CGRFA. Any such offence against the Code would jeopardise an offending State's entitlement to a certificate from the FAO saying that there are no unresolved complaints outstanding against them.[cv]

It should be noted that regional developments outside the FAO may also promote implementation of the Code of Conduct. The Manila Declaration Concerning the Ethical Utilisation of Asian Biological Resources[cvi] recommends the development of adequate national legislation to exercise control over the collection and export of biological material. Appendix 1 to the Manila Declaration is a Code of Ethics for Foreign Collectors of Biological Samples which recommends a set of actions by foreign collectors to ensure that the developing country signatories which provide biological samples are not disadvantaged by the transfer of PGRFA.[cvii] Similarly, seven Latin American States have signed a Resolution to promote regulation of foreign access to their PGRFA.[cviii]

International Technical Conferences

Four FAO International Technical Conferences on PGRFA have been held, in 1967, 1973, 1981 and 1996. The June 1996 Conference in Leipzig was designed to make the Global System fully operative, developing concrete, costed programs, projects and activities to implement the relevant parts of Agenda 21 and the Convention on Biological Diversity. The first report on the State of the World's PGRFA was presented and a Global Plan of Action was adopted.[cix]

Report on the State of the World's PGRFA

Signatories to the International Undertaking on Plant Genetic Resources are obliged to report annually to the FAO on measures they have taken or propose to explore, preserve, evaluate and make available PGRFA.[cx] The CGRFA Secretariat compiled this report using information in FAO member responses to questionnaires concerning the national situation of PGRFA conservation,[cxi] information provided by IPGRI and the IARCs, and field research conducted by the FAO and its consultants.[cxii] The report on 'The State of the World's Plant Genetic Resources' covers all aspects of conservation and the utilisation of PGRFA and identifies programs being carried out by regional, international and non-governmental organisations.[cxiii] It was designed to expose gaps, constraints and emergency situations so to guide the CGRFA's future discussions and provide an authoritative base for the Global Plan of Action.[cxiv]

Global Plan of Action on PGRFA

In 1991, when the Commission adopted Annexes to the International Undertaking, it mandated formulation of a Global Plan of Action to implement Farmers' Rights which would be financed by an International Fund established for this purpose. The Global Plan of Action on PGRFA as adopted in 1996 aims to: ensure the conservation of plant genetic resources for food and agriculture as the basis of food security; to promote sustainable use of plant genetic resources to foster development and reduce hunger and poverty; to promote the fair and equitable sharing of the benefits arising from the use of plant genetic resources; to assist countries and institutions to identify priorities for action; and to strengthen existing programs and enhance institutional capacity. Its 20 chapters are organised into four sections, as set out below.

The Global Plan of Action

In Situ Conservation and Development

1. Surveying and Inventoring of PGRFA
2. Supporting On-farm Management and Improvement of PGRFA
3. Assisting Farmers in Disaster Situations to Restore Agricultural Systems

4. Promoting in situ Conservation of Wild Crop Relatives and Wild Plants for Food Production

Ex Situ Conservation

5. Sustaining Existing Ex Situ Collections
6. Regenerating Threatened Ex Situ Accessions
7. Supporting Planned and Targeted Collecting of PGRFA
8. Expanding Ex Situ Conservation Activities

Use of Plant Genetic Resources

9. Expanding Characterization, Evaluation and Core Collections
10. Increasing Genetic Enhancement and Base-Broadening
11. Promoting Sustainable Agriculture
12. Promoting Underutilized Crops and Species
13. Supporting Seed Production and Distribution
14. Developing New Markets for Local Varieties and Diversity-Rich Products

Institutions and Capacity Building

15. Building Strong National Programmes
16. Promoting Networks for PGRFA
17. Constructing Comprehensive Information System of PGRFA
18. Developing Monitoring and Early Warning Systems for PGRFA
19. Expanding and Improving Education and Training
20. Promoting Public Awareness for PGRFA

Implementation of the Global Plan of Action has been progressed through a series of regional implementation strategy meetings held in 1998, seeking to mobilise and coordinate the resources of international organisations, governments and NGOs.[cxv] Fundamentally, existing funds, programs and institutional resources are being deployed. Less duplication, better coordination and better prioritization are intended. Nevertheless, much business is conducted as usual, even within the FAO. Although the Leipzig Conference recognised the need for mobilisation of financial resources and that "full implementation of the Global Plan of Action would involve a significant increase in the activities currently taking place",[cxvi] implementation efforts have been hampered by lack of additional funds.

At Leipzig International Technical Conference, costing and financing were controversial and the Plan was adopted without those critical issues being resolved. The CGRFA Secretariat was requested at Leipzig to refine the costings in light of changes introduced there into the Plan and it has been revising and representing them at each CGRFA meeting since.[cxvii] Three options for additional funding have been presented, at the 1998 Ordinary Session they were in the order of US$ 150 million, US$248 million or US$ 455 million annually, but no budget for implementation of the Global Plan of Action has yet been adopted by the CGRFA.[cxviii] Donor reticence is expressed in terms of the uncertainties of costings, for example in accurately factoring in current expenditures, but is also caused by the stresses foreseen between declining overseas development assistance budgets and the on-going nature of the Global Plan of Action funding commitment.

In 1998, during the CGRFA Fifth Extraordinary Session, alternative funding sources were suggested.[cxix] Asian developing countries proposed that a share of financial benefits from the commercialisation of PGRFA be paid into an international fund under the control of the Governing Body of the revised International Undertaking. The International Association of Plant Breeders (the seed industry) indicated willingness to study a system whereby the owners of patents (plant breeders own plant variety rights, which are not patents) would contribute to a fund. The European Region[cxx] proposed a mechanism to better channel the flow of funds from existing available sources (such as is used under the Desertification Convention).

Clearly, formulation of a budget and commitments to funding are tied up with the revision of the International Undertaking. Its draft Article 8 sets out the Parties' commitment to implement the Global Plan of Action in a diverse range of qualified alternative wordings placed in bracketed texts. Draft Article 16 then addresses financial resources for the broader implementation of agreed plans and programs of the International Undertaking (fundamentally the Global Plan of Action) and requires that "agreed and predictable contributions" be made as set out in Annex IV. Ironically, Annex IV remains a blank page.

Ex Situ Early Warning System

As indicated in Agenda 21, Chapter 14 Program G, on conservation of PGRFA, in some instances the loss of plant genetic diversity is as great in genebanks as it is in the field, due to inadequate security of the PGRFA holdings.[cxxi] The Early Warning System is to draw rapid attention to specific hazards threatening the operation of genebanks and to threats of extinction of plant species.[cxxii]

In Situ Conservation

The FAO, in cooperation with other organisations, is developing a network of in situ conservation areas. This work focuses primarily on conserving wild relatives of cultivated plants, the promotion of "on farm conservation" and the utilisation of land races. A major priority is seen as the training of national experts.[cxxiii]

CONCLUSION : WILL THE PAPER BE WORTH THE TREES?

The 1989 and 1991 annexes to the original International Undertaking were awkward political accommodations, which resulted in highly ambiguous text restricting access to commercial plant germplasm and creating compensatory (but illusory) Farmers' Rights. Annex III itself acknowledged that many consequential questions remained unanswered and that 'conditions of access to plant genetic resources need further clarification'. This process of clarification and of revision in harmony with the CBD has made slow, painstaking progress and is not yet complete. Unfortunately, the International Undertaking now seems unlikely to realise its full potential to promote facilitated access, equitable benefit sharing and coordinated conservation of a wide range of PGRFA.

The overall scope of PGRFA covered by the International Undertaking remainS broad and ill-defined. However, for the purposes of particular operational provisions on access, the range of PGRFA covered is to be explicitly listed by genepool. A useful Multilateral System to facilitate access at low transaction cost has emerged but is limited to ex situ holdings of most germplasm in CGIAR collections. This leaves coverage gaps in which the terms of access to PGRFA are subject to bilateral negotiation.

The proposed Multilateral System addresses and protects the simpler, universally shared benefits of food security flowing from unrestricted access. It sidesteps the thornier issues of benefit sharing in other circumstances. Thus, it does not apply to access in commercial cases, such as for development of proprietary breeds, pharmaceutical or industrial products. Where commercial developments flow from access to PGRFA, the Parties' benefit sharing obligations remain undefined by the Multilateral System. Little additional guidance for bilateral benefit sharing in these cases is offered under the Code of Conduct or under the auspices of the CBD. Therefore, additional negotiations, probably within the forum of the CBD, will be necessary to facilitate efficient and fair benefit sharing in commercial cases.

In situ PGRFA are commonly found in more than one person's property or State's territory. Accordingly, non-arbitrary fair benefit sharing in commercial circumstances might distribute rewards for access to PGRFA equitably across a group of persons or regional states. Much of the global ex situ collection of PGRFA is held by several institutions not in countries of origin. Accordingly, fair benefit sharing might reasonably distribute rewards for access in commercial circumstances between the conserving institutions and countries of origin of ex situ collections. Therefore, where plant genetic resources are developed and commercialised, a reasonable general principle appears to be that benefits should be equitably distributed among the source countries and providers of the original materials.

When we factor this conclusion together with the knowledge that conservation of PGRFA is in the common interest, and the likelihood that a multilateral system could provide more fair and efficient PGRFA access and benefit sharing arrangements than ad hoc bilateral negotiations, then a further conclusion presents itself. It seems that congruent objectives would be served through the creation of an international fund financed by a levy on profits flowing from commercialised PGRFA and equitably distributed for their conservation.[cxxiv] As noted above, however, in cases of commercialised PGRFA, bilateral negotiation is the default approach, as the proposed Multilateral System does not apply, and equity considerations in benefit sharing are not yet addressed in the revised International Undertaking.

Further, conservation of PGRFA does not appear to be a central consideration in the emerging benefit sharing negotiations. Farmers' Rights, as originally articulated in the International Undertaking, were to provide a vehicle for PGRFA conservation. Especially in traditional farming communities, on-farm conservation could have been assisted by a fund, as proposed in the International Undertaking. The 1996 Global Plan of Action now provides an internationally agreed basis for distributing such funds. Nevertheless, developed countries have not contributed substantially to the fund created by the International Undertaking and it never became a vehicle for assisting farmers in conservation. The Global Plan of Action faces similar difficulties and the proposed Funding Strategy for the revised International Undertaking remains undecided. Finally, the revised text for the International Undertaking now undermines the original notion of Farmers' Rights by allowing exclusive and total national discretion in their implementation.

Renegotiation of the International Undertaking is providing a valuable learning experience in modelling PGRFA management for engaged elements of the international community. It is intimately linked to the developing Global System for PGRFA, although whether its effect has been to stimulate or retard is debatable. Further

information consultations will be held with a view to agreeing on a final text to be adopted by another Extraordinary Meeting of the Commission by the end of 2000. Sadly, however, an agreed multilateral approach to facilitate access, promote equitable benefit sharing and to coordinate conservation of a wide range of PGRFA seems as far away as when the renegotiation began. While one hopes otherwise, it seems that unlikely that the final paper will be worth the trees.

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[i] .

[ii]. 31 I.L.M. 822 (1992)

[iii] .

[iv] .

[v]. see below...

[vi]. There are [] members of the United Nations, therefore the vast majority are Parties to the CBD. 10 February 1999, http://www.biodiv.org/conv/pdf/ratification-date.pdf

[vii]. See below...

[viii]. For example, FAO activities embrace forestry and cotton growing.

[ix]. C. Fowler and P.R. Mooney *The Threatened Gene - Food, Politics ad the Loss of Genetic Diversity* (Lutterworth Press, Cambridge 1990) p.149.

[x]. Ibid.

[xi] .

[xii]. FAO Resolution C 9/83, Report of the 22nd Session of the FAO Conference (FAO, Rome, 1983).

[xiii]. Resolution 3/95. In this paper, references to the CPGR indicate the CGRFA as it correctly was at the time of the matter under discussion.

[xiv] . The CGRFA considered animal genetic resources for the first time in 1999. []

[xv]. CGRFAFA-Ex4/97/REPORT Appendix F.

[xvi]. J. Esquinas-Alcazar 'The Global System on Plant Genetic Resources' *RECIEL* Vol.2 (1993) Issue 2, p.153.

[xvii] .

[xviii] .

[xix] .

[xx]. B. Groombridge, see note 54 above, p.549.

[xxi]. C. Heywood, V. Heywood & P. Jackson, *International Directory of Botanical Gardens V* (1990), extracted in B. Groombridge, see note 54 above, p.559.

[xxii]. B. Groombridge, id. p.549.

[xxiii] . While, in theory, many botanic gardens recognise the principle of open access, in practice there are a number of restrictions. For example, Argentina requires an undertaking from botanic gardens wishing to export wild genetic stock that they will inform them as to whom they will pass on the material and for what purpose the stock will be used. [id. p.174] Similarly, the Kew Royal Botanic Gardens in Britain require assurances from recipients that if the accessed seed stock is commercialised then Kew will receive a share of the profits. Kew would then retain a portion of these royalties and pass the remainder on to the donor country.[id. p.179]

[xxiv] .

[xxv] .

[xxvi]. D. Van Sloten D, 'IBPGR and the Challenges of the 1990's: a Personal Point of View', 6 Diversity, p38; cited in B. Groombridge *Global Biodiversity: Status of the Earth's Living Resources* (1992) pp.557.

[xxvii]. Id. p.176.

[xxviii]. Rural Advancement Fund International (RAFI), 'A Report on Germplasm Embargoes', (RAFI Communiques, September 1988) p.1, cited id. n.17.

[xxix]. IARC work can be broadly divided into six categories: (1) productivity research; (2) management of natural resources; (3) improvement of the policy environment in developing countries; (4) research institution building in developing countries; (5) germplasm conservation; and (6) building of linkages between agricultural research institutions around the world. Id. p.176.

[xxx]. S. Johnston 'Conservation Role of Botanic Gardens and Gene Banks' *RECIEL*, Vol. 2 (1993) Issue 2 p.175.

[xxxi]. J.R. Kloppenberg *First the Seed* (Cambridge University Press, Cambridge 1988) p.160

[xxxii]. Id. 164. The 40 public and private sector donors are a consortium of countries, private foundations and regional development banks, as well as the World Bank, UN Development Program and FAO. The work of the CGIAR has, however, been subject to criticism from some developing countries and conservationists as tending to wrest control of PGRFA from developing countries and traditional farmers and deliver it to developed countries and commercial agricultural interests. As the CGIAR stands outside of the UN system, it can be accused of being answerable to donor countries and their agri-industrial interests as much as to international food and agricultural security concerns. C. Fowler and P.R. Mooney, see note 10 above, p.150.

[xxxiii]. In 1990 and 1991, CGIAR decided to reorient towards more work on sustainable development. In order to maintain the productivity of natural resource bases it therefore decided to focus on protecting the diversity of

PGRFA, dealing with soil degradation, addressing climate change, promoting growth in less productive areas, and management of pests and nutrients in ways that would reduce dependence on agricultural chemicals*Geneflow* - A Publication About the Earth's Plant Genetic Resources (CGIAR, Washington 1992). This new approach resulted in expansion of the system to include new international centres, such as the Centre for International Forestry Research established in Bogor, Indonesia, in early 1994.

[xxxiv].

[xxxv]. CGRFAFA-Ex4/97/REPORT Appendix F. Australia adhered after adoption of the 1989 and 1991 amendments.

[xxxvi]. States that adhere to the International Undertaking but are not members of the CGRFA are Bahrain, Kuwait, Liechtenstein and Russia. CGRFAFA-Ex4/97/REPORT Appendix F.

[xxxvii]. Eight developed countries formally recorded their reservations and declined to adhere to the International Undertaking at the time of its adoption ().

[xxxviii]. See below...

[xxxix]. IPGRI.

[xl]. As noted above (), silviculture and cotton fibre production are included in FAO work, even though they are not food production activities.

[xli]. Article 1.

[xlii]. Developed countries which did not adopt the International Undertaking in 1983 included Australia, Canada, France, Germany, Japan, New Zealand, Switzerland and USA. (Declarations of reasons..)

[xliii]. FAO Conference Resolutions 4/89 (1989), 5/89 (1989), and 3/91 (1991). These resolutions were negotiated by both members and non-members of the CPGR, including also countries which had and had not signed the International Undertaking. (CPGR/94/WG/2 'Revision of the International Undertaking: Background and the Step by Step Process' p.2.)

[xliv]. Ibid.

[xlv].

[xlvi]. Ibid.

[xlvii]. Resolution 5/89, 'Report of the 24th Session of the FAO Conference' (C89 REP, FAO, Rome, 1989).

[xlviii]. Resolution 5/89, 'Report of the 24th Session of the FAO Conference' (C89 REP, FAO, Rome, 1989.

[xlix]. Resolution 4/89, 'Report of the 24th Session of the FAO Conference' (C89 REP, FAO, Rome, 1989.

[l]. The Fifth Session of the CPGR (April 1993) agreed that questions which remain to be answered in relation to the International Fund include: the nature of funding (voluntary or mandatory); linkage between financial responsibility and benefit from the use of PGRFA; whether countries, uses or consumers should bear financial responsibilities; how the relative needs of beneficiaries (especially developing countries) are to be estimated; and how farmers and local communities would benefit from the funding. (CL 103/16, 'Report of the 5th Session of the Commission on Plant Genetic Resources', FAO, Rome, June 1993).

[li]. Nevertheless, some countries (e.g. Malaysia) do not distinguish between Farmers' Rights and the national interest in obtaining benefits by representing farmers.

[lii]. It is interesting to note that the CBD provisions on matters concerning conservation and sustainable use apply to a broader subject range than the provisions on access. The provisions on access apply merely to genetic resources, whereas the other provisions cover all biological resources, including genetic, animal, microbiological, and biochemical resources.? Exclusion of the latter from the access provisions raises questions about the applicability of the CBD to bioprospecting for active biochemical ingredients.

[liii].

[liv]. However, the CBD Conference of Parties has decided that the CBD does not cover human genetic resources (). This decision seems to be based on practical and ethical considerations, as the Convention makes no distinction between species categories of genetic resources (which are defined simply as "genetic material of actual or potential value" (CBD Article 2)).

[lv]. see above

[lvi]. Id. p. 3. Suggested complementary options for provision of access to PGRFA are (a) international framework agreements to facilitate bilateral exchanges; and (b) multilateral agreements on the availability and conditions of access to in situ and/or ex situ collections. (CPGR/94/WG9/4 Issues for Consideration of 'Stage II': Access to Genetic Resources and Farmers' Rights, p. 5.)

[lvii]. CBD Article 15.2

[lviii]. CBD Article 15.4

[lix]. CBD Article 15.5

[lx]. The desirability of bilateral, as compared to multilateral, approaches and the circumstances in which each might be preferred is examined below.

[lxi]. CBD Article 15.7.

[lxii]. Article 19.2 provides that: Each Contracting party shall take all practicable measures to promote and advance priority access on a fair and equitable basis by Contracting Parties, especially developing countries, to the result

and benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties. Such access shal be on mutually agreed terms.

[lxiii] . CBD Article 16.

[lxiv] . The latter is an unusual qualification, as it is a principle of customary international law that domestic legislation offers no defence to the non-implementation of an international obligation. []

[lxv]. 31 I.L.M. 822 (1992)

[lxvi]. Ibid. See also Agenda 21 Chapter 14 Section G para 60(f).

[lxvii]. beginning with integration of the three Annexes into the main text

[lxviii]. CL 103/16, 'Report of the 5th Session of the Commission on Plant Genetic Resources, (FAO, Rome, June 1993).

[lxix]. C/93/REP/5 'Report of the 27th Session of the FAO Conference' (FAO, Rome, November 1993).

[lxx] .

[lxxi]. wolrd cup

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[lxxiii]. linages and FAO sites

[lxxiv]. IPGRI...

[lxxv] . Draft Article 5 Composite Draft Text of the International Undertaking on Plant Genetic Resources (CGRFA-8/99/13/Annex) FAO Rome 19-23 April 1999

[lxxvi]. As the USA has proposed.

[lxxvii]. Article 2 also provides a definition of what PGRFA are and may require amendment as the fundamentals of the regime emerge.

[lxxviii]. record

[lxxix]. Consolidated Draft Negotiating Text, Article 11.3.4(a) and (b), CGRFAFA-Ex4.

[lxxx]. CGRFAFA-Ex4/97/REPORT para 4.

[lxxxi]. Ibid.

[lxxxii]. CGRFAFA-Ex5/98/1

[lxxxiii]. To complicate matters further, some of those national collections are being privatised. Earth Negotiations Bulletin Vol. 9, No. 76 Summary p.10

[lxxxiv] . A State not adhering to the International Undertaking would allowed access to listed germplasm on terms to be decided by the Governing Body for the International Undertaking, such as these agreed uses.

[lxxxv] .

[lxxxvi]. CPGR Circular State Letter 1988.

[lxxxvii]. Progress Report on the International Network of Ex Situ Collections under the Auspices of the FAO, CGRFA Eighth Regular Session, Rome 19-23 April 1999 (CGRFA-8/99/7).

[lxxxviii]. CPGR/94/WG/2 'Revision of the International Undertaking: Background and the Step by Step Process' p.2.

[lxxxix] .

[xc] . Second Joint Statement Of FAO And CGIAR Centres On The Agreement Placing CGIAR Germplasm Collections Under The Auspices Of FAO CGRFA-8/99/7 p.5 ANNEX 2.

[xci] .

[xcii].. An earlier CGIAR position had been to require that the developers negotiate with the CGIAR if derived varieties or genes isolated from the material were to be protected and used commercially Ibid seems to have been adandoned.

[xciii]. Communication between T.W. Edministor, Administrator, Agriculture Research Service, US Department of Agriculture and R.H. Demuth, Chairman, IBPGR (19 January 1977), in P. Mooney 'The Law of the Seed: Another Development and Plant Genetic Resources' in Development Dialogue 1-2, pp.30-31, 1983.

[xciv]. J.R. Kloppenburg (ed), *Seeds and Sovereignty: the Use and Control of Plant Genetic Resources* (Duke University Press, London) p.251.

[xcv]. P. Mooney 'The Law of the Seed: Another Development and Plant Genetic Resources' in *Development Dialogue* 1-2, p72, 1983; cited in Johnston, see note 52 above, n.30.

[xcvi] . The CBD Parties are moving towards common understandings of benefit sharing. At the 4th Conference of Parties, in Bratislava in May 1998, Decision IV/8 was taken to establish a Panel of Experts on access and benefit sharing. The Panel met 4-8 October 1999 and its report concluded, in relation to benefit sharing, that flexibility should be allowed to Parties in negotiating shared benefits. It goes on to distinguish between monetary and non-monetary benefits and notes several modes of sharing which may be useful. UNEP/CBD/EP-ABS/L.5/Rev.1, cited in ENB Vol. 9, no. 131 p. 4.

[xcvii] . In a tragi-comic session, the USA argued that the capitals should be removed from the phrase “Farmers’ Rights”, as they are not formal rights held by individuals, collectives or States and are merely notional.

[xcviii]. The Fifth Session of the CPGR noted that no agreement had been reached on the nature of contributions to the International Fund, (id.). However, progress has been made in another forum. The Keystone International Dialogue, in which governments, industry, international organisations and non-governmental organisations participated, supported the concept of an International Fund to implement Farmers' Rights. It agreed to a

mandatory fund of a minimum of US$ 500 million p.a., or US$ 1.5 billion from 1993-2000. (Report of the Third and Final Session of the International Dialogue, Oslo 1991.)

[xcix] .

[c] .

[ci]. CL 103/16-Sup.1, 'Agreed Text on Draft International Code of Conduct for Plant Germplasm Collecting and Transfer', (CL 103/16, 'Report of the 5th Session of the Commission on Plant Genetic Resources', pp.9-10, (FAO, Rome, June 1993).

[cii]. Resolution 8/93, 'Report of the 27th Session of FAO Conference' (C93/REP/5, FAO, Rome, November 1993).

[ciii] .

[civ] . Article 3.2.

[cv]. Eric Canal-Forgues 'Code of Conduct for Plant Germplasm Collecting and Transfer' *RECIEL* Vol. 2 (1993) Issue 2, p.171.

[cvi]. Declared at the Seventh Asian Symposium on Medicinal Plants Spices and other Products (ASOMPS VI), Manila 2-7 February 1992, attended by 283 scientists from 31 countries.

[cvii]. Appendix 2 is a set of Contract Guidelines designed to promote minimum standards to achieve equity in partnerships concering transfer of genetic resources between developed countries and the country of origin. 48A.

[cviii] .

[cix]. CL 103/16, 'Report of the 5th Session of the Commission on Plant Genetic Resources', p.13, (FAO, Rome, June 1993).

[cx]. See Art. 11 International Undertaking on PGRFA, below.

[cxi]. CPGR 91/5

[cxii] .

[cxiii]. J. Esquinas-Alcazar, see note 15 above, p.157 n.14.

[cxiv]. CL 103/16, 'Report of the 5th Session of the Commission on Plant Genetic Resources', pp.3-4, (FAO, Rome, June 1993).

[cxv] . Eighth Session

[cxvi] .

[cxvii] .

[cxviii] . Section G on conservation and sustainable utilization of PGRFA in Agenda 21 Chapter 14 on Promoting Sustainable Agriculture and Rural Development agreed on the indicative amount of US$ 600 million per annum, half of which would be on grant or concessional terms.

[cxix] . CGRFA –Ex5/98/REP, cited in CGRFA-8/99/4 para 27.

[cxx] . Within the FAO, members caucus within five permanent regional groupings.

[cxxi]. See also C. Fowler and P.R. Mooney, see note 10 above, pp. 163-165.

[cxxii]. J. Esquinas Alcazar, see note 15 above, p.155

[cxxiii]. CL 103/16, FAO, 'Report of the 5th Session of the Commission on Plant Genetic Resources', p.12, June 1993.

[cxxiv] . proposed by the Asian countries