

**Compendium of International Arrangements on Transfer of
Technology : Selected Instruments**

**Relevant provisions in selected international arrangements
pertaining
to transfer of technology**



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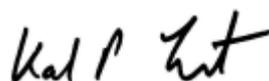
Preface

The need for technology transfer, especially to developing countries, has been recognised in various international fora.* Over 80 international instruments and numerous subregional and bilateral agreements contain measures related to transfer of technology and capacity building. The technology-related provisions contained in such instruments follow different approaches, depending on the object and purpose of the respective instruments. They all aim, however, at promoting access to technologies and, in some cases, the development of local capabilities in developing countries, particularly in least developed countries.

The adoption of technology-related provisions is an expression of States' willingness to cooperate internationally to redress or reduce the asymmetric distribution of scientific and technological capabilities in the world. There has been some success in implementation, but more needs to be done. A considerable gap exists between the intentions expressed in the agreed provisions and their effective implementation. This *Compendium* of the various commitments is intended as a reminder of the considerable scope for further policy action.

The present *Compendium* contains a selection of transfer of technology-related provisions drawn from international instruments. Thus, it includes relevant excerpts of international instruments at the multilateral, regional, inter-regional and bilateral levels. The use of the term “instrument” is meant to reflect the variety of form and effect of the international acts and documents. It seems reasonable to group them according to their differing forms and membership: multilateral instruments (universal or quasi-universal in their memberships), interregional instruments (which involve two or more regions often through their respective regional institutions), regional instruments (membership is limited to a particular group, defined geographically or otherwise), bilateral agreements, and other instruments among States, and resolutions of organs of international organizations. Each of these categories contains both legally binding and non-binding instruments. Instruments at the multilateral level are grouped in legally binding instruments and not legally binding ones. The former instruments also include ones not yet in force but agreed-upon by the respective parties. The regional level category also contains both forms of instruments. Drafts, non-governmental instruments and the outcome of an UNCTAD Expert Meeting are reproduced in an annex.

An effort has been made to select instruments that reflect a broad variety of forms, policies, practices and effectiveness of implementation. These aspects are discussed in the Overview. The excerpts in this *Compendium* should not necessarily be viewed as model provisions.



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Geneva, June 2001

* In the Bangkok plan of Action, UNCTAD was requested to “analyse all aspects of existing international agreements relevant to transfer of technology” and “examine and disseminate widely information on best practices for access to technology” (paragraphs 117 and 128), UNCTAD (2000a).

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Overview

The abilities to create new technology and to acquire and adapt successfully technologies from both external and internal sources are critical determinants of a country's ability to compete successfully. While this applies to all countries, it is evident that the transfer of technology from foreign sources and from international and domestic research institutes represents a potent source of technological information particularly for developing countries. The challenge is to establish and maintain effective access to this information and to devise mechanisms for deploying it effectively within an economy. Technological knowledge includes both the know-how of processes for producing goods and services and the organizational and management information needed to produce and distribute goods and services efficiently. Such technology is embedded in machinery, equipment, licensing agreements, and managerial skills. Opportunities to learn also occur through other means such as training and access to the global stock of scientific and technical information. A key component of any transfer process is the effective transfer of the skills and intangible know-how that ensure production capability.¹

Indeed, since the 1970s, developing countries have expressed in various international fora their desire for improved access to foreign technologies and enhanced technological capabilities. In the past two decades, specific provisions on transfer of technology have been incorporated into various international instruments. Such provisions have different objectives and scope, and different modes of implementation, including the provision of financing, and are subject to different terms and conditions. In most cases, however, such provisions contain only "best efforts" commitments, rather than mandatory rules.

Main categories of instruments

In the context of transfer of technology and capacity building, two broad but overlapping categories of technology-related provisions in international instruments can be distinguished. The first category deals with standard setting to protect proprietary technology. Broadly speaking, "standard setting" instruments attempt to provide a balance between rights and obligations of the creators and potential users of technology.² For instance, the basic principles of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) refer to criteria and objectives regarding the contribution that the protection and enforcement of intellectual property rights (IPRs) should make to "the promotion of technological innovation and to the transfer and dissemination of technology" (Article 7). These instruments are essentially concerned with the availability, scope and use of IPRs. Though the TRIPS Agreement expressly refers to transfer of technology, concerns have been expressed about the lack of mechanisms in the Agreement to operationalize it, and the need to develop this concept further in future negotiations has been indicated.³ This category also includes standard setting instruments concluded at the regional level, for example, NAFTA, European Union, Andean Group and ASEAN.

¹ See also UNCTAD (1996a) and UNCTAD (1999).

² In this context, due to the intellectual property rights system, inventions and creative works become commodities that may be transferred by commercial transactions, e.g. bought, leased or sold, and thus have their utilization and diffusion facilitated through investment, licensing or other transfer arrangements.

³ See Correa (1999) and also UNCTAD (2000b), p. 230.

The second category of instruments focuses more on direct measures for transfer of technology to and capacity building in developing countries, in particular in least developed countries (LDCs). These instruments deal more with the transfer of specific technologies, e.g. technologies for the protection of human health and environment, technologies for the conservation of biodiversity and technologies for the exploration and exploitation of marine resources. While the first category of instruments essentially relies on national measures for their implementation, particularly home country measures in developed countries, the second category has generally in-built mechanisms, including provisions for financing. For instance, in the Montreal Protocol on Substances that Deplete the Ozone Layer, the capacity of the parties to fulfil their obligations to comply with the control measures set out in the Protocol depends on the effective implementation of financial co-operation and the transfer of technology. This category of instruments includes an array of international and regional instruments containing provisions for promoting transfer of technology in various sectors, such as in the case of ESCOWAS, ASEAN and sub-groupings in various regions.

Main features

A main feature of the instruments on transfer of technology and capacity building is that they distinguish between categories of addressees, namely developed and developing countries. Some instruments make an even more specific distinction among the parties by identifying groups of countries. The most common is the special identity accorded to LDCs. The main objective of such distinctions is to assign differing obligations to different categories of addressees, so that technology can be transferred from countries with strong capabilities, i.e. developed countries, to countries with low capacities, i.e. developing countries, more particularly LDCs. Thus, the technology-related provisions refer specifically to developing countries or LDCs. For example, the Agreement on Technical Barriers to Trade, the Montreal Protocol and the TRIPS Agreement recognize, in their respective preambles, the special situation and needs of developing countries and LDCs. Often a favourable treatment for these countries, resulting in differentiated obligations with regard to the implementation process, is included in the instruments. For example, in the Vienna Convention for the Protection of the Ozone Layer (Article 4.2), the Convention on Biological Diversity (Article 16) and the TRIPS Agreement (Article 66.2), specific reference is made to transfer of technology to developing countries and/or to LDCs.

Technology-related provisions are designed to deal with transfer of technology and capacity building for broad objectives or for specific targets, and the consequent obligations are to be met by one or several categories of addressees. For instance, the General Agreement on Trade in Services (GATS) and the TRIPS Agreements both refer to technology in a broader sense, whereas the Law of the Sea Convention deals specifically with marine technology and capacity building in the management, exploration and exploitation of marine resources. Provisions of the Vienna Convention and the Montreal Protocol are related to technologies for environmental protection. Some of these instruments provide a definition of technology. In the absence of a generally accepted definition of technology, the terms of a Convention should be interpreted in accordance with its ordinary meaning, in its context, and in the light of a treaty's object and purpose (Article 31.1 of the Vienna Convention on the Law of the Treaties).⁴ This implies that, even in cases where the same terms are used in different instruments, the specific meaning attributed to such terms in a particular agreement should be established taking into account the context of a provision and the particular object

⁴ United Nations (1980), see also Aust (2000).

and purpose of the treaty in question. For example, the object and purpose of the TRIPS Agreement is to establish minimum standards for intellectual property rights.⁵ Hence, the reference in Article 66.2 of the Agreement to encourage “technology transfer” to LDCs should be interpreted as alluding to technologies protected by patents and other intellectual property rights.⁶ References to technology in other instruments (e.g. Articles 144 and 268 of the Law of the Sea Convention, Article 4 of the Kyoto Protocol, Article 34 of Agenda 21) may be deemed to comprise protected as well as non-protected technologies. The type of technology can also be defined in terms of capacity building. An explicit aim of Agenda 21 is to “support indigenous capacity building”, in particular in developing countries, so that they can assess, adopt, manage and apply environmentally sound technologies. Similarly, GATS refers to this specific issue in its annex on telecommunication.

The type of technology is also related to the objective pursued by the technology-related provisions. In some cases, provisions explicitly define their objectives in terms of the results to be achieved or by describing the type of the activities to be undertaken. In other cases the objectives are defined in general terms, or are implicit and can be derived from the wording and context of the relevant provision. An example of a detailed definition of the objectives of technology-related provisions is provided in the Law of the Sea Convention, which details the “basic objectives” to be reached directly or through the competent international organizations. The strengthening of capabilities is also mentioned as an objective of international cooperation in the International Undertaking on Plant Genetic Resources for Food and Agriculture.

In some instruments, the technology-related provisions are less explicit, but the object and purpose of the actions to be undertaken are described in some detail. Thus, the Vienna Convention stresses the need to conduct research and scientific assessments (Article 3.1), encourages the exchange of scientific, technical, socio-economic, commercial and legal information (Article 4.1 and Annex II) and refers to cooperation for the acquisition of technologies and equipment, as well as training (Article 4.2). Unlike the Law of the Sea Convention and Agenda 21, the Vienna Convention focuses more on access to technology than on the development of local capabilities.⁷ In other instruments, the section dealing with the general framework indicates areas in which measures may be taken, for instance in the Cotonou Agreement.

Another key feature of provisions related to technology is their method of implementation. As the transfer of technology is a central element in many instruments, capacity building often has as its objective enabling the developing country members to comply with their commitments under the instruments dealing with specific types of technology.

⁵ See UNCTAD (1996b).

⁶ See, in particular, Article 2 of the TRIPS Agreement.

⁷ It should be noted that many instruments include provisions that specifically relate to technology (e.g. Article 19 (g) of the Energy Charter), while others deal simultaneously with scientific and technological matters (e.g. Article 5 (b) of the Kyoto Protocol; Article 16.19 of Agenda 21). In some cases, the object of the provisions is exclusively scientific activities (e.g. Article 143 of the Convention on the Law of the Sea; Article 3 of the Vienna Convention). The Law of the Sea Convention deals specifically with transfer of technology in marine technology and capacity building in the management, exploration and exploitation of marine resources.

Mechanisms of implementation

The implementation of a provision depends on the legal nature of the instrument in terms of its voluntary or legally binding nature, on the hortatory or mandatory character of the provision, on the wording used to define and the conditions applied to the obligations at stake. Some of the selected instruments (International Undertaking,⁸ Agenda 21) are not legally binding in nature. This means that any State action that is in conformity with their provisions should be deemed legitimate under international law, but no party is strictly obliged to comply with the instrument. Despite the “soft” nature of these agreements, their negotiation, interpretation and amendment are often as complex and difficult as in the case of binding agreements, since non-binding rules create international precedents.⁹ Given their non-binding nature, this type of instrument may include statements intended to establish concepts or principles, without a prescriptive intent.¹⁰

International instruments that are legally binding in nature contain, in principle, mandatory provisions that require certain positive or negative action by the contracting parties. In some cases, the required conduct is clearly spelled out. Article 66.2 of the TRIPS Agreement provides an example of an obligation imposed on developed countries, which “shall provide incentives to enterprises and institutions” in their territories. Though this provision leaves great leeway to member countries to determine what kind of incentives to apply, it *does* positively require the establishment of some system of encouragement of transfer of technology (any type of technology protected under intellectual property rights) to LDCs. The provision also provides a general objective that may help to assess the appropriateness of such incentives, since they should enable LDCs “to create a sound and viable technological base”. The question may be raised as to whether non-compliance with any provision of the TRIPS Agreement, including Article 66.2, could give rise to complaints by the affected members under WTO’s dispute settlement Understanding.¹¹ It should be noted that an authoritative interpretation of the WTO rules can only be made by the member States. The recommendations and rulings of the Dispute Settlement Body cannot add to or diminish rights and obligations provided in the covered agreements (Article 3.2 of the Understanding).¹²

Treaties usually give rise to numerous divergences about their interpretation. In some cases, contracting parties may issue agreed interpretations in order to clarify existing provisions.¹³ For instance, under WTO rules it is possible to develop agreed interpretations which, unless otherwise provided, require a three-fourths majority (Article IX of the Marrakesh Agreement Establishing the WTO). Another mechanism that may be used, if provided for by the treaty, is to adopt protocols on particular subjects, as allowed by the Vienna Convention¹⁴ and by the Convention on Biological Diversity.¹⁵ Such protocols make

⁸ The revision of the International Undertaking, currently under negotiation in the framework of the Commission on Genetic Resources, may lead to the adoption of a legally binding instrument.

⁹ See, for instance, “Part II: Historical perspective and reflection” in Patel, Roffe and Yusuf (2000).

¹⁰ See, e.g. Article 16.10 of Agenda 21 (Human resource development: Training of competent professionals in the basic and applied sciences at all levels... is one of the most essential components of any programme of this kind. Creating awareness of the benefits and risks of biotechnology is essential”).

¹¹ GATT/WTO (1994), Annex 2.

¹² Binding *inter partes* (the Appellate Body and also the Panels refer frequently to earlier decisions)

¹³ See also Jackson (2000), in particular page 184.

¹⁴ The Montreal Protocol was developed in the framework of this Convention, considering, *inter alia*, “the importance of promoting cooperation in the research, development and transfer of alternative technologies

it possible to clarify and develop treaty provisions, and to establish specific mechanisms for the implementation of parties' obligations.

Given differences in addressees, type of technology and objectives of international instruments, it is logical to expect instruments to provide for different methods of implementation. The ways in which such provisions can be executed involve a wide range of methods in line with the established differentiated obligations. Some agreements have in-built mechanisms, either in the form of international cooperation, which may require the intervention of international organizations, or in the form of a special institutional set-up for implementation of the provisions, e.g. the Law of the Sea Convention. An interesting case aimed at facilitating transfer of technology to developing countries is offered by the Montreal Protocol. The addressees are developing countries, whose capacity to fulfil the obligations concerning the phase-out of ozone-depleting substances depends upon effective implementation of the financial cooperation and transfer-of-technology provisions of the Protocol (Articles 5, 10 and 10A). Transfer of technology and related provisions on financing are based on the objective/target that ozone-depleting substances, e.g. chlorofluorocarbons (CFCs), should be eliminated by both developing and developed countries.¹⁶ On the basis of the Protocol's flexibility¹⁷ and, consequently, the established differentiated obligations for developing countries, not only is a grace period granted for phasing out the use and production of ozone-depleting substances but also a financial mechanism has been established for transfer of technology for the benefit of these countries. Moreover, the implementation of the agreed obligations by developing countries is made dependent upon the effective implementation by developed countries of the financial cooperation and transfer of technology provisions of the Protocol. Thus, for the fulfilment of the differentiated obligations of parties, a specific method of implementation is built into the Protocol itself.

Questions may be raised as to what extent such mechanisms combining financial provisions and transfer of environmentally sound technologies, including propriety ones, and monitoring arrangements¹⁸ could be emulated in the area of more general types of technology, e.g. relating to infrastructure, health, nutrition and telecommunication.

Many technology-related provisions rely on national measures, particularly home country measures¹⁹ in developed countries, for their implementation. This feature is particularly common in those instruments that are standard-setting ones and deal also with transfer of technology often without determining a specific target to reach. The adoption of home country measures only by developed countries is to be found, for example, in Article 66.2 of the TRIPS Agreement as an obligation for developed countries, which "shall provide incentives to enterprises and institutions in their territories" in order to promote and

relating to the control and reduction of emission of substances that deplete the ozone layer, bearing in mind in particular the needs of developing countries" (Preamble).

¹⁵ In the course of the negotiations for the revision of the International Undertaking, one option under consideration has been to adopt the revised Undertaking as a protocol to the Convention on Biological Diversity.

¹⁶ See also UNCTAD (2000c), p. 63.

¹⁷ "Flexibility" can be defined as the ability of an international instrument to be adapted to the particular conditions prevailing in developing countries and to the realities of the economic and technological asymmetries between these countries and developed countries. See UNCTAD (2000d).

¹⁸ The instruments dealing with transfer of technology in specific sectors establish mechanisms to monitor and facilitate States parties' implementation of and compliance with their obligations. The process of establishing such mechanisms in international environmental agreements has been seen as an important contribution to the international law of cooperation. See Churchill, Robin R. and Geir Ulfstein (2000).

¹⁹ See UNCTAD (2000e).

encourage transfer of technology to LDCs to “enable them to create a sound and viable technological base”.

The effectiveness of implementation depends also on the terms and conditions under which transfer of technology takes place. Different agreements have different terms. In some agreements provisions call for “fair and reasonable terms”, whereas some other agreements emphasize the commercial nature of such transfer. It is interesting to note that, despite the clear recognition of the need for an “effective protection” of IPRs, Article 16.5 of the Convention on Biological Diversity aims at balancing this approach by indicating that cooperation may be necessary to ensure that such rights do not limit or impede the implementation of the Convention. Agenda 21 is more explicit on this subject; and, while requiring that account be taken of the need to protect IPRs (Article 34.14 (b)), it encourages the adoption of measures “to prevent abuses” of such rights, including through compulsory licenses with the provision of “equitable remuneration” to the right holder (Article 34.18 (e)). Conditions relating to IPRs can also be found, *inter alia*, in the Energy Charter (Article 19.1 (h)). The Berne Convention for the Protection of Literary and Artistic Works permits any developing country to grant non-exclusive and non-transferable licenses to its nationals for reproduction or translation of copyright protected works for teaching and scientific research purposes (Appendix).

Finally, at the regional level, instruments that deal with the promotion of, and cooperation in, transfer of technology do not refer to terms and conditions of transfer of technology as such. Mention should also be made of bilateral treaties for the protection and promotion of foreign investment.²⁰ Some of these instruments refer to transfer of technology in such a way that it could not be used as a performance requirement (for example the Canada-Chile Free Trade Agreement). Some other agreements with the broader objective of trade and investment cooperation (for instance, the partnership agreement between European Union and Ukraine) refer to the protection of intellectual property rights.

While transfer of technology is a fundamental goal of many international instruments, especially in agreements involving developing countries,²¹ one of the main challenges is how to ensure that “transfer and diffusion” provisions are given effect and translated into practice. The *Compendium* focuses mainly on the provisions of those international arrangements that can promote and facilitate transfer of technology to developing countries. In other words, it draws particular attention to provisions intended to realize such a transfer of technology. It also includes instruments that do not contain specific provisions relevant to transfer of technology calling for specific actions, but may nevertheless have an impact on the access to and transfer of technology such as IPRs conventions, Andean Group decisions and Directives of the European Union.

²⁰ For a listing of such treaties, see UNCTAD (2000). *Bilateral Investment Treaties, 1959-1999* (Geneva: UNCTAD), UNCTAD/ITE/IIA/2; <<http://www.unctad.org/en/pub/poiteiid2.en.htm>>

For their analysis, see UNCTAD (1998). *Bilateral Investment Treaties in the Mid-1990s* (Geneva: UNCTAD) United Nations publication, Sales No. E.98.II.D.8, as well as others international investment treaties contained in UNCTAD (1996). *International Investment Instruments: A Compendium*, vol. I, II and III (Geneva: UNCTAD), United Nations publication, Sales Nos. E.96.II.A.9; E.96.II.A.10; and E.96.II.A.11; UNCTAD (2000). *International Investment Instruments: A Compendium*, vol. IV and V (Geneva: UNCTAD), United Nations publication, Sales Nos. E.00.II.D.13 and E.00.II.D.14; and UNCTAD (forthcoming). *International Investment Instruments: A Compendium*, vol. VI (Geneva: UNCTAD), United Nations publication, forthcoming.

²¹ For a more detailed analysis of issues in international investment agreements (IIAs), see UNCTAD (forthcoming).

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I. MULTILATERAL LEVEL

A. Multilateral Instruments

1. Paris Convention for the Protection of Industrial Property*

Article 2

National Treatment for Nationals of Countries of the Union

1. Nationals of any country of the Union shall, as regards the protection of industrial property, enjoy in all the other countries of the Union the advantages that their respective laws now grant, or may hereafter grant, to nationals; all without prejudice to the rights specially provided for by this Convention. Consequently, they shall have the same protection as the latter, and the same legal remedy against any infringement of their rights, provided that the conditions and formalities imposed upon nationals are complied with.

2. However, no requirement as to domicile or establishment in the country where protection is claimed may be imposed upon nationals of countries of the Union for the enjoyment of any industrial property rights.

3. The provisions of the laws of each of the countries of the Union relating to judicial and administrative procedure and to jurisdiction, and to the designation of an address for service or the appointment of an agent, which may be required by the laws on industrial property are expressly reserved.

Article 3

Same Treatment for Certain Categories of Persons as for Nationals of Countries of the Union

Nationals of countries outside the Union who are domiciled or who have real and effective industrial or commercial establishments in the territory of one of the countries of the Union shall be treated in the same manner as nationals of the countries of the Union.

Article 5 quater

Patents: Importation of Products Manufactured by a Process Patented in the Importing Country

When a product is imported into a country of the Union where there exists a patent protecting a process of manufacture of the said product, the patentee shall have all the rights, with regard to the imported product, that are accorded to him by the legislation of the country of importation, on the basis of the process patent, with respect to products manufactured in that country.

Article 10bis

Unfair Competition

(1) The countries of the Union are bound to assure to nationals of such countries effective protection against unfair competition.

* Paris Convention (1883):

WIPO (1991). *Paris Convention for the Protection of Industrial Property*, No. 201(E), (Geneva: WIPO); and <http://www.wipo.int/eng/iplex/wo_par0_.htm>

(2) Any act of competition contrary to honest practices in industrial or commercial matters constitutes an act of unfair competition.

(3) The following in particular shall be prohibited:

1. all acts of such a nature as to create confusion by any means whatever with the establishment, the goods, or the industrial or commercial activities, of a competitor;
2. false allegations in the course of trade of such a nature as to discredit the establishment, the goods, or the industrial or commercial activities, of a competitor;
3. indications or allegations the use of which in the course of trade is liable to mislead the public as to the nature, the manufacturing process, the characteristics, the suitability for their purpose, or the quantity, of the goods.

* * *

2. Berne Convention for the Protection of Literary and Artistic Works*

Appendix [Special Provisions regarding Developing Countries]

Article III

[*Limitation on the Right of Reproduction*: 1. Licenses grantable by competent authority; 2. to 5. Conditions allowing the grant of such licenses; 6. Termination of licenses; 7. Works to which this Article applies]

1. Any country which has declared that it will avail itself of the faculty provided for in this Article shall be entitled to substitute for the exclusive right of reproduction provided for in Article 9 a system of non-exclusive and non-transferable licenses, granted by the competent authority under the following conditions and subject to Article IV.

2. (a) If, in relation to a work to which this Article applies by virtue of paragraph (2), after the expiration of:
 - (i) the relevant period specified in paragraph (3), commencing on the date of first publication of a particular edition of the work, or
 - (ii) any longer period determined by national legislation of the country referred to in paragraph (1), commencing on the same date,

copies of such edition have not been distributed in that country to the general public or in connection with systematic instructional activities, by the owner of the right of reproduction or with his authorization, at a price reasonably related to that normally charged in the country for comparable works, any national of such country may obtain a license to reproduce and publish such edition at that or a lower price for use in connection with systematic instructional activities.

- (b) A license to reproduce and publish an edition which has been distributed as described in subparagraph (a) may also be granted under the conditions provided for in this Article if, after the expiration of the applicable period, no authorized copies of that edition have been on sale for a period of six months in the country concerned to the general public or in connection with systematic instructional activities at a price reasonably related to that normally charged in the country for comparable works.

3. The period referred to in paragraph (2)(a)(i) shall be five years, except that
 - (i) for works of the natural and physical sciences, including mathematics, and of technology, the period shall be three years;
 - (ii) for works of fiction, poetry, drama and music, and for art books, the period shall be seven years.

* Berne Convention (1971):

WIPO (1992). *Berne Convention for the Protection of Literary and Artistic Works*, No. 287(E), Geneva: WIPO); and <http://www.wipo.int/eng/iplex/wo_ber0_.htm>; and <<http://untreaty.un.org/ENGLISH/series/simpleunts.asp>>

4. (a) No license obtainable after three years shall be granted under this Article until a period of six months has elapsed
 - (i) from the date on which the applicant complies with the requirements mentioned in Article IV(1), or
 - (ii) where the identity or the address of the owner of the right of reproduction is unknown, from the date on which the applicant sends, as provided for in Article IV(2), copies of his application submitted to the authority competent to grant the license.
 - (b) Where licenses are obtainable after other periods and Article IV(2) is applicable; no license shall be granted until a period of three months has elapsed from the date of the dispatch of the copies of the application.
 - (c) If, during the period of six or three months referred to in subparagraph (a) and subparagraph (b), a distribution as described in paragraph (2)(a) has taken place, no license shall be granted under this Article.
 - (d) No license shall be granted if the author has withdrawn from circulation all copies of the edition for the reproduction and publication of which the license has been applied for.
5. A license to reproduce and publish a translation of a work shall not be granted under this Article in the following cases:
- (i) where the translation was not published by the owner of the right of translation or with his authorization, or
 - (ii) where the translation is not in a language in general use in the country in which the license is applied for.
6. If copies of an edition of a work are distributed in the country referred to in paragraph (1) to the general public or in connection with systematic instructional activities, by the owner of the right of reproduction or with his authorization, at a price reasonably related to that normally charged in the country for comparable works, any license granted under this Article shall terminate if such edition is in the same language and with substantially the same content as the edition which was published under the said license. Any copies already made before the license terminates may continue to be distributed until their stock is exhausted.
7. (a) Subject to subparagraph (b), the works to which this Article applies shall be limited to works published in printed or analogous forms of reproduction
 - (b) This Article shall also apply to the reproduction in audio-visual form of lawfully made audio-visual fixations including any protected works incorporated therein and to the translation of any incorporated text into a language in general use in the country in which the license is applied for, always provided that the audio-visual fixations in question were prepared and published for the sole purpose of being used in connection with systematic instructional activities.

* * *

3. International Convention for the Protection of New Varieties of Plants (1961)*

Article 3

National Treatment

(1) Without prejudice to the rights specially provided for in this Convention, natural and legal persons resident or having their headquarters in one of the member States of the Union shall, in so far as the recognition and protection of the breeder's right are concerned, enjoy in the other member States of the Union the same treatment as is accorded or may hereafter be accorded by the respective laws of such States to their own nationals, provided that such persons comply with the conditions and formalities imposed on such nationals.

(2) Nationals of member States of the Union not resident or having their headquarters in one of those States shall likewise enjoy the same rights provided that they fulfil such obligations as may be imposed on them for the purpose of enabling the new varieties which they have bred to be examined and the multiplication of such varieties to be controlled.

Article 12

Right of Priority

(1) Any breeder or his successor in title who has duly filed an application for protection of a new variety in one of the member States of the Union shall, for the purposes of filing in the other member States of the Union, enjoy a right of priority for a period of twelve months. This period shall run from the date of filing of the first application. The day of filing shall not be included in such period.

(2) To benefit from the provisions of the preceding paragraph, the further filing must include an application for protection of the new variety, a claim in respect of the priority of the first application and, within a period of three months, a copy of the documents which constitute that application, certified to be a true copy by the authority which received it.

(3) The breeder or his successor in title shall be allowed a period of four years after the expiration of the period of priority in which to furnish, to the member State of the Union with which he has filed an application for protection in accordance with the terms of paragraph (2), the additional documents and material required by the laws and regulations of that State.

* UPOV 1961:

UPOV (1996) *International Convention for the Protection of New Varieties of Plants* of December 2, 1961, as Revised at Geneva on November 10, 1972, on October 23, 1978, and on March 19, 1991, UPOV Publication No 221 (E), Geneva.

(4) Such matters as the filing of another application or the publication or use of the subject of the application, occurring within the period provided for in paragraph (1), shall not constitute grounds for objection to an application filed in accordance with the foregoing conditions. Such matters may not give rise to any right in favour of a third party or to any right of personal possession.

* * *

4. International Convention for the Protection of New Varieties of Plants (1991)*

Article 4

National Treatment

1. [Treatment] Without prejudice to the rights specified in this Convention, nationals of a Contracting Party as well as natural persons resident and legal entities having their registered offices within the territory of a Contracting Party shall, insofar as the grant and protection of breeders' rights are concerned, enjoy within the territory of each other Contracting Party the same treatment as is accorded or may hereafter be accorded by the laws of each such other Contracting Party to its own nationals, provided that the said nationals, natural persons or legal entities comply with the conditions and formalities imposed on the nationals of the said other Contracting Party.

2. ["Nationals"] For the purposes of the preceding paragraph, "nationals" means, where the Contracting Party is a State, the nationals of that State and, where the Contracting Party is an intergovernmental organization, the nationals of the States which are members of that organization.

Article 11

Right of Priority

1. [The right; its period] Any breeder who has duly filed an application for the protection of a variety in one of the Contracting Parties (the "first application") shall, for the purpose of filing an application for the grant of a breeder's right for the same variety with the authority of any other Contracting Party (the "subsequent application"), enjoy a right of priority for a period of twelve months. This period shall be computed from the date of filing of the first application. The day of filing shall not be included in the latter period.

2. [Claiming the right] In order to benefit from the right of priority, the breeder shall, in the subsequent application, claim the priority of the first application. The authority with which the subsequent application has been filed may require the breeder to furnish, within a period of not less than three months from the filing date of the subsequent application, a copy of the documents which constitute the first application, certified to be a true copy by the authority with which that application was filed, and samples or other evidence that the variety which is the subject matter of both applications is the same.

3. [Documents and material] The breeder shall be allowed a period of two years after the expiration of the period of priority or, where the first application is rejected or withdrawn, an appropriate time after such rejection or withdrawal, in which to furnish, to the authority of the Contracting Party with which he has filed the subsequent application, any necessary information, document or material required for the purpose of the examination under Article 12, as required by the laws of that Contracting Party.

* UPOV 1991:

UPOV (1996) *International Convention for the Protection of New Varieties of Plants* of December 2, 1961, as Revised at Geneva on November 10, 1972, on October 23, 1978, and on March 19, 1991, UPOV Publication No 221 (E), Geneva.

4. [Events occurring during the period] Events occurring within the period provided for in paragraph (1), such as the filing of another application or the publication or use of the variety that is the subject of the first application, shall not constitute a ground for rejecting the subsequent application. Such events shall also not give rise to any third-party right.

Article 14

Scope of the Breeder's Right

1. [Acts in respect of the propagating material]

(a) Subject to Article 15 and Article 16, the following acts in respect of the propagating material of the protected variety shall require the authorization of the breeder:

- (i) production or reproduction (multiplication),
- (ii) conditioning for the purpose of propagation,
- (iii) offering for sale,
- (iv) selling or other marketing,
- (v) exporting,
- (vi) importing,
- (viii) stocking for any of the purposes mentioned in (i) to (vi), above.

(b) The breeder may make his authorization subject to conditions and limitations.

2. [Acts in respect of the harvested material] Subject to Article 15 and Article 16, the acts referred to in items paragraph (1)(a)(i) to paragraph (1)(a)(vii) in respect of harvested material, including entire plants and parts of plants, obtained through the unauthorized use of propagating material of the protected variety shall require the authorization of the breeder, unless the breeder has had reasonable opportunity to exercise his right in relation to the said propagating material.

3. [Acts in respect of certain products] Each Contracting Party may provide that, subject to Article 15 and Article 16, the acts referred to in items paragraph (1)(a)(i) to paragraph (1)(a)(vii) in respect of products made directly from harvested material of the protected variety falling within the provisions of paragraph (2) through the unauthorized use of the said harvested material shall require the authorization of the breeder, unless the breeder has had reasonable opportunity to exercise his right in relation to the said harvested material.

4. [Possible additional acts] Each Contracting Party may provide that, subject to Article 15 and Article 16, acts other than those referred to in items paragraph (1)(a)(i) to paragraph (1)(a)(vii) shall also require the authorization of the breeder.

5. [Essentially derived and certain other varieties]

(a) The provisions of paragraph (1) to paragraph (4) shall also apply in relation to

- (i) varieties which are essentially derived from the protected variety, where the protected variety is not itself an essentially derived variety,

- (ii) varieties which are not clearly distinguishable in accordance with Article 7 from the protected variety and
 - (iii) varieties whose production requires the repeated use of the protected variety.
- (b) For the purposes of subparagraph (a)(i), a variety shall be deemed to be essentially derived from another variety ("the initial variety") when
- (i) it is predominantly derived from the initial variety, or from a variety that is itself predominantly derived from the initial variety, while retaining the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety,
 - (ii) it is clearly distinguishable from the initial variety and
 - (iii) except for the differences, which result from the act of derivation, it conforms to the initial variety in the expression of the essential characteristics that result from the genotype or combination of genotypes of the initial variety.
- (c) Essentially derived varieties may be obtained for example by the selection of a natural or induced mutant, or of a somaclonal variant, the selection of a variant individual from plants of the initial variety, backcrossing, or transformation by genetic engineering.

Article 15

Exceptions to the Breeder's Right

1. [Compulsory exceptions] The breeder's right shall not extend to
 - (i) acts done privately and for non-commercial purposes,
 - (ii) acts done for experimental purposes and
 - (iii) acts done for the purpose of breeding other varieties, and, except where the provisions of Article 14(5) apply, acts referred to in Article 14(1) to Article 14(4) in respect of such other varieties.
2. [Optional exception] Notwithstanding Article 14, each Contracting Party may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeder's right in relation to any variety in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety or a variety covered by Article 14 (5)(a)(i) or Article 14(5)(a)(ii).

Article 16

Exhaustion of the Breeder's Right

1. [Exhaustion of right] The breeder's right shall not extend to acts concerning any material of the protected variety, or of a variety covered by the provisions of Article 14(5), which has been sold or otherwise marketed by the breeder or with his consent in the territory of the Contracting Party concerned, or any material derived from the said material, unless such acts

- (i) involve further propagation of the variety in question or
- (ii) involve an export of material of the variety, which enables the propagation of the variety, into a country which does not protect varieties of the plant genus or species to which the variety belongs, except where the exported material is for final consumption purposes.

2. [Meaning of "material"] For the purposes of paragraph (1), "material" means, in relation to a variety,

- (i) propagating material of any kind,
- (ii) harvested material, including entire plants and parts of plants, and
- (iii) any product made directly from the harvested material.

3. ["Territory" in certain cases] For the purposes of paragraph (1), all the Contracting Parties which are member States of one and the same intergovernmental organization may act jointly, where the regulations of that organization so require, to assimilate acts done on the territories of the States members of that organization to acts done on their own territories and, should they do so, shall notify the Secretary-General accordingly.

Article 17

Restrictions on the Exercise of the Breeder's Right

1. [Public interest] Except where expressly provided in this Convention, no Contracting Party may restrict the free exercise of a breeder's right for reasons other than of public interest.

2. [Equitable remuneration] When any such restriction has the effect of authorizing a third party to perform any act for which the breeder's authorization is required, the Contracting Party concerned shall take all measures necessary to ensure that the breeder receives equitable remuneration.

Article 18

Measures Regulating Commerce

The breeder's right shall be independent of any measure taken by a Contracting Party to regulate within its territory the production, certification and marketing of material of varieties or the importing or exporting of such material. In any case, such measures shall not affect the application of the provisions of this Convention

Article 19

Duration of the Breeder's Right

1. [Period of protection] The breeder's right shall be granted for a fixed period.
2. [Minimum period] The said period shall not be shorter than 20 years from the date of the grant of the breeder's right. For trees and vines, the said period shall not be shorter than 25 years from the said date.

* * *

5. United Nations Convention on the Law of the Sea^{*}

Prompted by the desire to settle, in a spirit of mutual understanding and co-operation, all issues relating to the law of the sea and aware of the historic significance of this Convention as an important contribution to the maintenance of peace, justice and progress for all peoples of the world;

Conscious that the problems of ocean space are closely interrelated and need to be considered as a whole;

Recognizing the desirability of establishing through this Convention, with due regard for the sovereignty of all States, a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment.

Article 62

Utilization of the living resources

4. Nationals of other States fishing in the exclusive economic zone shall comply with the conservation measures and with the other terms and conditions established in the laws and regulations of the coastal State. These laws and regulations shall be consistent with this Convention and may relate, *inter alia*, to the following:

- (a) licensing of fishermen, fishing vessels and equipment, including payment of fees and other forms of remuneration, which, in the case of developing coastal States, may consist of adequate compensation in the field of financing, equipment and technology relating to the fishing industry;
- (i) terms and conditions relating to joint ventures or other co-operative arrangements;
- (j) requirements for the training of personnel and the transfer of fisheries technology, including enhancement of the coastal State's capability of undertaking fisheries research.

Article 143

Marine scientific research

3. States Parties may carry out marine scientific research in the Area. States Parties shall promote international co-operation in marine scientific research in the Area by:

- (a) participating in international programmes and encouraging co-operation in marine scientific research by personnel of different countries and of the Authority;

^{*} Law of the Sea (1982):
International Legal Materials, Volume 21, Number 5, September 1982; and
<http://www.un.org/Depts/los/los_docs.htm>

- (b) ensuring that programmes are developed through the Authority or other international organizations as appropriate for the benefit of developing States and technologically less developed States with a view to:
 - (i) strengthening their research capabilities;
 - (ii) training their personnel and the personnel of the Authority in the techniques and applications of research;
 - (iii) fostering the employment of their qualified personnel in research in the Area;
- (c) effectively disseminating the results of research and analysis when available, through the Authority or other international channels when appropriate.

Article 144

Transfer of technology

1. The Authority shall take measures in accordance with this Convention:
 - (a) to acquire technology and scientific knowledge relating to activities in the Area; and
 - (b) to promote and encourage the transfer to developing States of such technology and scientific knowledge so that all States Parties benefit therefrom.
2. To this end the Authority and States Parties shall co-operate in promoting the transfer of technology and scientific knowledge relating to activities in the Area so that the Enterprise and all States Parties may benefit therefrom. In particular they shall initiate and promote:
 - (a) programmes for the transfer of technology to the Enterprise and to developing States with regard to activities in the Area, including, *inter alia*, facilitating the access of the Enterprise and of developing States to the relevant technology, under fair and reasonable terms and conditions;
 - (b) measures directed towards the advancement of the technology of the Enterprise and the domestic technology of developing States, particularly by providing opportunities to personnel from the Enterprise and from developing States for training in marine science and technology and for their full participation in activities in the Area.

Article 266

Promotion of the development and transfer of marine technology

1. States, directly or through competent international organizations, shall co-operate in accordance with their capabilities to promote actively the development and transfer of marine science and marine technology on fair and reasonable terms and conditions.
2. States shall promote the development of the marine scientific and technological capacity of States which may need and request technical assistance in this field, particularly developing States, including land-locked and geographically disadvantaged States, with regard to the exploration, exploitation, conservation and management of marine resources, the protection and preservation of the marine environment, marine scientific

research and other activities in the marine environment compatible with this Convention, with a view to accelerating the social and economic development of the developing States.

3. States shall endeavour to foster favourable economic and legal conditions for the transfer of marine technology for the benefit of all parties concerned on an equitable basis.

Article 267

Protection of legitimate interests

States, in promoting co-operation pursuant to Article 266, shall have due regard for all legitimate interests including, *inter alia*, the rights and duties of holders, suppliers and recipients of marine technology.

Article 268

Basic objectives

States, directly or through competent international organizations, shall promote:

- (a) the acquisition, evaluation and dissemination of marine technological knowledge and facilitate access to such information and data;
- (b) the development of appropriate marine technology;
- (c) the development of the necessary technological infrastructure to facilitate the transfer of marine technology;
- (d) the development of human resources through training and education of nationals of developing States and countries and especially the nationals of the least developed among them;
- (e) international co-operation at all levels, particularly at the regional, subregional and bilateral levels.

Article 269

Measures to achieve the basic objectives

In order to achieve the objectives referred to in Article 268, States, directly or through competent international organizations, shall endeavour, *inter alia*, to:

- (a) establish programmes of technical co-operation for the effective transfer of all kinds of marine technology to States which may need and request technical assistance in this field, particularly the developing land-locked and geographically disadvantaged States, as well as other developing States which have not been able either to establish or develop their own technological capacity in marine science and in the exploration and exploitation of marine resources or to develop the infrastructure of such technology;
- (b) promote favourable conditions for the conclusion of agreements, contracts and other similar arrangements, under equitable and reasonable conditions;
- (c) hold conferences, seminars and symposia on scientific and technological subjects, in particular on policies and methods for the transfer of marine technology;
- (d) promote the exchange of scientists and of technological and other experts;
- (e) undertake projects and promote joint ventures and other forms of bilateral and multilateral co-operation.

Article 270*Ways and means of international co-operation*

International co-operation for the development and transfer of marine technology shall be carried out, where feasible and appropriate, through existing bilateral, regional or multilateral programmes, and also through expanded and new programmes in order to facilitate marine scientific research, the transfer of marine technology, particularly in new fields, and appropriate international funding for ocean research and development.

Article 271*Guidelines, criteria and standards*

States, directly or through competent international organizations, shall promote the establishment of generally accepted guidelines, criteria and standards for the transfer of marine technology on a bilateral basis or within the framework of international organizations and other fora, taking into account, in particular, the interests and needs of developing States.

Article 272*Co-ordination of international programmes*

In the field of transfer of marine technology, States shall endeavour to ensure that competent international organizations coordinate their activities, including any regional or global programmes, taking into account the interests and needs of developing States, particularly land-locked and geographically disadvantaged States.

Article 273*Co-operation with international organizations and the Authority*

States shall co-operate actively with competent international organizations and the Authority to encourage and facilitate the transfer to developing States, their nationals and the Enterprise of skills and marine technology with regard to activities in the Area.

Article 274*Objectives of the Authority*

Subject to all legitimate interests including, *inter alia*, the rights and duties of holders, suppliers and recipients of technology, the Authority, with regard to activities in the Area, shall ensure that:

- (a) on the basis of the principle of equitable geographical distribution, nationals of developing States, whether coastal, land-locked or geographically disadvantaged, shall be taken on for the purposes of training as members of the managerial, research and technical staff constituted for its undertakings;
- (b) the technical documentation on the relevant equipment, machinery, devices and processes is made available to all States, in particular developing States which may need and request technical assistance in this field;
- (c) adequate provision is made by the Authority to facilitate the acquisition of technical assistance in the field of marine technology by States which may need

- and request it, in particular developing States, and the acquisition by their nationals of the necessary skills and know-how, including professional training;
- (d) States which may need and request technical assistance in this field, in particular developing States, are assisted in the acquisition of necessary equipment, processes, plant and other technical know-how through any financial arrangements provided for in this Convention.

Article 275

Establishment of national centres

1. States, directly or through competent international organizations and the Authority, shall promote the establishment, particularly in developing coastal States, of national marine scientific and technological research centres and the strengthening of existing national centres, in order to stimulate and advance the conduct of marine scientific research by developing coastal States and to enhance their national capabilities to utilize and preserve their marine resources for their economic benefit.

2. States, through competent international organizations and the Authority, shall give adequate support to facilitate the establishment and strengthening of such national centres so as to provide for advanced training facilities and necessary equipment, skills and know-how as well as technical experts to such States which may need and request such assistance.

Article 276

Establishment of regional centres

1. States, in co-ordination with the competent international organizations, the Authority and national marine scientific and technological research institutions, shall promote the establishment of regional marine scientific and technological research centres, particularly in developing States, in order to stimulate and advance the conduct of marine scientific research by developing States and foster the transfer of marine technology.

2. All States of a region shall co-operate with the regional centres therein to ensure the more effective achievement of their objectives.

Article 277

Functions of regional centres

The functions of such regional centres shall include, *inter alia*:

- (a) training and educational programmes at all levels on various aspects of marine scientific and technological research, particularly marine biology, including conservation and management of living resources, oceanography, hydrography, engineering, geological exploration of the sea-bed, mining and desalination technologies;
- (b) management studies;
- (c) study programmes related to the protection and preservation of the marine environment and the prevention, reduction and control of pollution;
- (d) organization of regional conferences, seminars and symposia;

- (e) acquisition and processing of marine scientific and technological data and information;
- (f) prompt dissemination of results of marine scientific and technological research in readily available publications;
- (g) publicizing national policies with regard to the transfer of marine technology and systematic comparative study of those policies;
- (h) compilation and systematization of information on the marketing of technology and on contracts and other arrangements concerning patents;
- (i) technical co-operation with other States of the region.

Annex III. Basic Conditions of Prospecting, Exploration and Exploitation

Article 5

Transfer of technology

1. When submitting a plan of work, every applicant shall make available to the Authority a general description of the equipment and methods to be used in carrying out activities in the Area, and other relevant non-proprietary information about the characteristics of such technology and information as to where such technology is available.

2. Every operator shall inform the Authority of revisions in the description and information made available pursuant to paragraph 1 whenever a substantial technological change or innovation is introduced.

3. Every contract for carrying out activities in the Area shall contain the following undertakings by the contractor:

- (a) to make available to the Enterprise on fair and reasonable commercial terms and conditions, whenever the Authority so requests, the technology which he uses in carrying out activities in the Area under the contract, which the contractor is legally entitled to transfer. This shall be done by means of licences or other appropriate arrangements which the contractor shall negotiate with the Enterprise and which shall be set forth in a specific agreement supplementary to the contract. This undertaking may be invoked only if the Enterprise finds that it is unable to obtain the same or equally efficient and useful technology on the open market on fair and reasonable commercial terms and conditions;
- (b) to obtain a written assurance from the owner of any technology used in carrying out activities in the Area under the contract, which is not generally available on the open market and which is not covered by subparagraph (a), that the owner will, whenever the Authority so requests, make that technology available to the Enterprise under licence or other appropriate arrangements and on fair and reasonable commercial terms and conditions, to the same extent as made available to the contractor. If this assurance is not obtained, the technology in question shall not be used by the contractor in carrying out activities in the Area;
- (c) to acquire from the owner by means of an enforceable contract, upon the request of the Enterprise and if it is possible to do so without substantial cost to the contractor, the legal right to transfer to the Enterprise any technology used by the contractor, in carrying out activities in the Area under the contract, which the contractor is otherwise not legally entitled to transfer and which is not generally available on the open market. In cases where there is a substantial corporate

relationship between the contractor and the owner of the technology, the closeness of this relationship and the degree of control or influence shall be relevant to the determination whether all feasible measures have been taken to acquire such a right. In cases where the contractor exercises effective control over the owner, failure to acquire from the owner the legal right shall be considered relevant to the contractor's qualification for any subsequent application for approval of a plan of work;

- (d) to facilitate, upon the request of the Enterprise, the acquisition by the Enterprise of any technology covered by subparagraph under licence or other appropriate arrangements and on fair and reasonable commercial terms and conditions, if the Enterprise decides to negotiate directly with the owner of the technology;
- (e) to take the same measures as are prescribed in subparagraphs (a), (b), (c) and (d) for the benefit of a developing State or group of developing States which has applied for a contract under Article 9 of this Annex, provided that these measures shall be limited to the exploitation of the part of the area proposed by the contractor which has been reserved pursuant to Article 8 of this Annex and provided that activities under the contract sought by the developing State or group of developing States would not involve transfer of technology to a third State or the nationals of a third State. The obligation under this provision shall only apply with respect to any given contractor where technology has not been requested by the Enterprise or transferred by that contractor to the Enterprise.

4. Disputes concerning undertakings required by paragraph 3, like other provisions of the contracts, shall be subject to compulsory settlement in accordance with Part XI and, in cases of violation of these undertakings, suspension or termination of the contract or monetary penalties may be ordered in accordance with Article 18 of this Annex. Disputes as to whether offers made by the contractor are within the range of fair and reasonable commercial terms and conditions may be submitted by either party to binding commercial arbitration in accordance with the UNCITRAL Arbitration Rules or such other arbitration rules as may be prescribed in the rules, regulations and procedures of the Authority. If the finding is that the offer made by the contractor is not within the range of fair and reasonable commercial terms and conditions, the contractor shall be given 45 days to revise his offer to bring it within that range before the Authority takes any action in accordance with Article 18 of this Annex.

5. If the Enterprise is unable to obtain on fair and reasonable commercial terms and conditions appropriate technology to enable it to commence in a timely manner the recovery and processing of minerals from the Area, either the Council or the Assembly may convene a group of States Parties composed of those which are engaged in activities in the Area, those which have sponsored entities which are engaged in activities in the Area and other States Parties having access to such technology. This group shall consult together and shall take effective measures to ensure that such technology is made available to the Enterprise on fair and reasonable commercial terms and conditions. Each such State Party shall take all feasible measures to this end within its own legal system.

6. In the case of joint ventures with the Enterprise, transfer of technology will be in accordance with the terms of the joint venture agreement.

7. The undertakings required by paragraph 3 shall be included in each contract for the carrying out of activities in the Area until 10 years after the commencement of commercial production by the Enterprise, and may be invoked during that period.

8. For the purposes of this Article, "technology" means the specialized equipment and technical know-how, including manuals, designs, operating instructions, training and technical advice and assistance, necessary to assemble, maintain and operate a viable system and the legal right to use these items for that purpose on a non-exclusive basis.

* * *

6. The Vienna Convention for the Protection of the Ozone Layer*

Aware of the potentially harmful impact on human health and the environment through modification of the ozone layer,

Taking into account the circumstances and particular requirements of developing countries,

Aware that measures to protect the ozone layer from modifications due to human activities require international co-operation and action, and should be based on relevant scientific and technical considerations,

Aware also of the need for further research and systematic observations to further develop scientific knowledge of the ozone layer and possible adverse effects resulting from its modification.

Article 1

Definitions

For the purposes of this Convention:

3. "Alternative technologies or equipment" means technologies or equipment the use of which makes it possible to reduce or effectively eliminate emissions of substances which have or are likely to have adverse effects on the ozone layer.

7. "Protocols" means protocols to this Convention.

Article 2

General obligations

1. The Parties shall take appropriate measures in accordance with the provisions of this Convention and of those protocols in force to which they are party to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer.

2. To this end the Parties shall, in accordance with the means at their disposal and their capabilities:

(a) co-operate by means of systematic observations, research and information exchange in order to better understand and assess the effects on human health and the environment from modification of the ozone layer;

[...]

4. The application of this Article shall be based on relevant scientific and technical considerations.

* The Vienna Convention (1985):

International Legal Materials, Volume 26, Number 6, November 1987; and

<<http://www.unep.org/ozone/Handbook2000-part1>>

Article 3*Research and systematic observations*

1. The Parties undertake, as appropriate, to initiate and co-operate in, directly or through competent international bodies, the conduct of research and scientific assessments on:

- (a) The physical and chemical processes that may affect the ozone layer;
- (b) The human health and other biological effects deriving from any modifications of the ozone layer, particularly those resulting from changes in ultra-violet solar radiation having biological effects (UV-B);
- (c) Climatic effects deriving from any modifications of the ozone layer;
- (d) Effects deriving from any modifications of the ozone layer and any consequent change in UV-B radiation on natural and synthetic materials useful to mankind;
- (e) Substances, practices, processes and activities that may affect the ozone layer, and their cumulative effects;
- (f) Alternative substances and technologies;
- (g) Related socio-economic matters; and as further elaborated in annexes I and II.

Article 4*Co-operation in the legal, scientific and technical fields*

1. The Parties shall facilitate and encourage the exchange of scientific, technical, socio-economic, commercial and legal information relevant to this Convention as further elaborated in annex II. Such information shall be supplied to bodies agreed upon by the Parties. Any such body receiving information regarded as confidential by the supplying Party shall ensure that such information is not disclosed and shall aggregate it to protect its confidentiality before it is made available to all Parties.

2. The Parties shall co-operate, consistent with their national laws, regulations and practices and taking into account in particular the needs of the developing countries, in promoting, directly or through competent international bodies, the development and transfer of technology and knowledge. Such co-operation shall be carried out particularly through:

- (a) Facilitation of the acquisition of alternative technologies by other Parties;
- (b) Provision of information on alternative technologies and equipment, and supply of special manuals or guides to them;
- (c) The supply of necessary equipment and facilities for research and systematic observations;
- (d) Appropriate training of scientific and technical personnel.

Article 6*Conference of the Parties*

4. The Conference of the Parties shall keep under continuous review the implementation of this Convention, and, in addition, shall:

- (d) Adopt, in accordance with articles 3 and 4, programmes for research, systematic observations, scientific and technological co-operation, the exchange of information and the transfer of technology and knowledge;

Annex I: Research and systematic observations

3. The Parties to the Convention shall co-operate, taking into account the particular needs of the developing countries, in promoting the appropriate scientific and technical training required to participate in the research and systematic observations outlined in this annex. Particular emphasis should be given to the intercalibration of observational instrumentation and methods with a view to generating comparable or standardized scientific data sets.

Annex II: Information Exchange

1. The Parties to the Convention recognize that the collection and sharing of information is an important means of implementing the objectives of this Convention and of assuring that any actions that may be taken are appropriate and equitable. Therefore, Parties shall exchange scientific, technical, socio-economic, business, commercial and legal information.

2. The Parties to the Convention, in deciding what information is to be collected and exchanged, should take into account the usefulness of the information and the costs of obtaining it. The Parties further recognize that co-operation under this annex has to be consistent with national laws, regulations and practices regarding patents, trade secrets, and protection of confidential and proprietary information.

3. Scientific information. This includes information on:

- (a) Planned and ongoing research, both governmental and private, to facilitate the co-ordination of research programmes so as to make the most effective use of available national and international resources;
- (b) The emission data needed for research;
- (c) Scientific results published in peer-reviewed literature on the understanding of the physics and chemistry of the earth's atmosphere and of its susceptibility to change, in particular on the state of the ozone layer and effects on human health, environment and climate which would result from changes on all time-scales in either the total column content or the vertical distribution of ozone;
- (d) The assessment of research results and the recommendation for future research.

4. Technical information. This includes information on:

- (a) The availability and cost of chemical substitutes and of alternative technologies to reduce the emissions of ozone-modifying substances and related planned and ongoing research;
- (b) The limitations and any risks involved in using chemical or other substitutes and alternative technologies.

5. Socio-economic and commercial information on the substances referred to in annex I. This includes information on:

- (a) Production and production capacity;
- (b) Use and use patterns;
- (c) Imports/exports;
- (d) The costs, risks and benefits of human activities which may indirectly modify the ozone layer and of the impacts of regulatory actions taken or being considered to control these activities.

6. Legal information

This includes information on:

- (a) National laws, administrative measures and legal research relevant to the protection of the ozone layer;
- (b) International agreements, including bilateral agreements, relevant to the protection of the ozone layer;
- (c) Methods and terms of licensing and availability of patents relevant to the protection of the ozone layer.

Decisions adopted by the Conferences of the Parties to the Vienna Convention in respect of each Article of the Convention.

Decision VCI/4: Research, observations and transfer of technology.

The Conference of the Parties, in Decision VCI/4 of its First Meeting, decided that the following activities shall be given priority in the research, observations and transfer of technology:

Article 3

Research and systematic observations

- (a) The atmospheric impact of potential substitutes for the controlled substances particularly with regard to their likely ozone depletion potential and their greenhouse warming potential;
- (b) Monitoring of the rarer trace gases in the troposphere and research on their interactions;
- (c) The Global Ozone Observing System should be expanded particularly in the tropics and in the Southern hemisphere. Special attention must be paid to ozone monitoring in Polar regions. Nations should make a long-term commitment to such monitoring programmes including making sufficient resources available appropriate to the effective operation;
- (d) Research on the human health and biological implications of ultraviolet radiation changes at the earth's surface. Particular attention must be given to the impact on

- food production in the developing world and to development of crop varieties resistant to higher levels of ultraviolet radiation;
- (e) Research into the effects on the atmosphere of potential ozone layer depleting gases, other than the controlled substances, for example methyl chloroform;
 - (f) Studies on the social and economic effects of ozone depletion.

Decision VCIII/2: Reports of the Assessment Panels

The Conference of the Parties, in Decision VCIII/2 of its Third Meeting, decided:

1. To take note of the 1991 reports of Scientific Assessment, Environmental Effects Assessment and Technology and Economic Assessment Panels;
2. To take note of the ongoing work of the three Assessment Panels in preparing updated reports for consideration by the Seventh Meeting of the Parties to the Montreal Protocol;

Decision VCI/5: Research capability of developing countries

The Conference of Parties, in Decision VCI/5 of its First Meeting, decided to co-operate to ensure the enhancement of the capability of developing countries to contribute to ozone science research. This may be facilitated through the organization of workshops and the identification of institutes in developed countries which can co-operate with appropriate scientific institutions in the developing countries. The identification of financial institutions who might assist the development of an improved scientific capability in developing countries should also be undertaken.

Decisions on Ozone Research Managers

Decision VCII/4: Recommendations of the Ozone Research Managers

The Conference of the Parties, in Decision VCII/4 of its Second Meeting, decided to note the outcome of the first meeting of the Ozone Research Managers (WMO Global Ozone Research and Monitoring Project Report No. 23) and, in accordance with the recommendations of that meeting:

- (a) To request the Parties to the Convention to determine the ways and means to provide scientific and technical training in ozone monitoring and research and other relevant assistance especially to developing countries.

Decision VCII/9: Expansion of the Global Ozone Observing System Network

The Conference of the Parties, in Decision VCII/9 of its Second Meeting, decided to request the Parties to the Vienna Convention as a matter of urgency to facilitate through bilateral and multilateral contributions the expansion of the ozone observing stations network, in particular at locations selected on the basis of generally accepted scientific criteria which are in the territories of interested developing countries, and specifically to request:

- (a) WMO and UNEP to keep Parties continually aware of specific network needs which could be met by bilateral or multilateral co-operation;
- (b) developed countries to make voluntary contributions to the WMO Special Fund for Environmental Monitoring for GO3OS;
- (c) developing countries to make ozone layer monitoring a priority in their requests for bilateral and multilateral assistance within the context of the Global Ozone Observing System.

* * *

7. Montreal Protocol on Substances that Deplete the Ozone Layer*

Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge, taking into account technical and economic considerations and bearing in mind the developmental needs of developing countries,

Acknowledging that special provision is required to meet the needs of developing countries, including the provision of additional financial resources and access to relevant technologies, bearing in mind that the magnitude of funds necessary is predictable, and the funds can be expected to make a substantial difference in the world's ability to address the scientifically established problem of ozone depletion and its harmful effects,

Considering the importance of promoting international co-operation in the research, development and transfer of alternative technologies relating to the control and reduction of emissions of substances that deplete the ozone layer, bearing in mind in particular the needs of developing countries,

Article 5

Special situation of developing countries

1. Any Party that is a developing country and whose annual calculated level of consumption of the controlled substances in Annex A is less than 0.3 kilograms per capita on the date of the entry into force of the Protocol for it, or any time thereafter until 1 January 1999, shall, in order to meet its basic domestic needs, be entitled to delay for ten years its compliance with the control measures set out in Articles 2A to 2E, provided that any further amendments to the adjustments or Amendment adopted at the Second Meeting of the Parties in London, 29 June 1990, shall apply to the Parties operating under this paragraph after the review provided for in paragraph 8 of this Article has taken place and shall be based on the conclusions of that review.

5. Developing the capacity to fulfil the obligations of the Parties operating under paragraph 1 of this Article to comply with the control measures set out in Articles 2A to 2E, and any control measures in Articles 2F to 2H that are decided pursuant to paragraph 1 bis of this Article, and their implementation by those same Parties will depend upon the effective implementation of the financial co-operation as provided by Article 10 and the transfer of technology as provided by Article 10A.

* The Montreal Protocol (1987): as adjusted and amended by the second Meeting of the Parties (London, 27-29 June 1990) and by the fourth Meeting of the Parties (Copenhagen, 23-25 November 1992) and further adjusted by the seventh Meeting of the Parties (Vienna, 5-7 December 1995) and further adjusted and amended by the ninth Meeting of the Parties (Montreal, 15-17 September 1997).

International Legal Materials, Volume 26, Number 6, November 1987; and
<http://www.unep.org/ozone/mont_t.htm>

Article 9

Research, development, public awareness and exchange of information

1. The Parties shall co-operate, consistent with their national laws, regulations and practices and taking into account in particular the needs of developing countries, in promoting, directly or through competent international bodies, research, development and exchange of information on:

- (a) best technologies for improving the containment, recovery, recycling, or destruction of controlled substances or otherwise reducing their emissions;
- (b) possible alternatives to controlled substances, to products containing such substances, and to products manufactured with them; and ...

Article 10

Financial mechanism

1. The Parties shall establish a mechanism for the purposes of providing financial and technical co-operation, including the transfer of technologies, to Parties operating under paragraph 1 of Article 5 of this Protocol to enable their compliance with the control measures set out in Articles 2A to 2E, and any control measures in Articles 2F to 2H that are decided pursuant to paragraph 1 bis of Article 5 of the Protocol. The mechanism, contributions to which shall be additional to other financial transfers to Parties operating under that paragraph, shall meet all agreed incremental costs of such Parties in order to enable their compliance with the control measures of the Protocol. An indicative list of the categories of incremental costs shall be decided by the meeting of the Parties.

Article 10A

Transfer of technology

Each Party shall take every practicable step, consistent with the programmes supported by the financial mechanism, to ensure:

- (a) that the best available, environmentally safe substitutes and related technologies are expeditiously transferred to Parties operating under paragraph 1 of Article 5; and
- (b) that the transfers referred to in subparagraph (a) occur under fair and most favourable conditions.

* * *

8. Basel Convention on the control of Transboundary Movements of Hazardous Wastes and their Disposal*

Aware of the need to continue the development and implementation of environmentally sound low-waste technologies, recycling options, good house-keeping and management systems with a view to reducing to a minimum the generation of hazardous wastes and other wastes;

Taking into account also the limited capabilities of the developing countries to manage hazardous wastes and other wastes;

Recognizing the need to promote the transfer of technology for the sound management of hazardous wastes and other wastes produced locally, particularly to the developing countries in accordance with the spirit of the Cairo Guidelines and decision 14/16 of the Governing Council of UNEP on Promotion of the transfer of environmental protection technology.

Article 4

General Obligations

2. Each Party shall take the appropriate measures to:
 - (a) Ensure that the generation of hazardous wastes and other wastes within it is reduced to a minimum, taking into account social, technological and economic aspects;
 - (b) Ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it, whatever the place of their disposal;

Article 10

International Co-operation

1. The Parties shall co-operate with each other in order to improve and achieve environmentally sound management of hazardous wastes and other wastes.

* Basel Convention (1989):
UNEP (1999). *Basel convention on the control of transboundary movements of hazardous wastes and their disposal*, SBC No. 99/001 ; and <<http://www.basel.int/text/con-e.htm>>.

2. To this end, the Parties shall:
- (a) Upon request, make available information, whether on a bilateral or multilateral basis, with a view to promoting the environmentally sound management of hazardous wastes and other wastes, including harmonization of technical standards and practices for the adequate management of hazardous wastes and other wastes;
 - (b) Co-operate in monitoring the effects of the management of hazardous wastes on human health and the environment;
 - (c) Co-operate, subject to their national laws, regulations and policies, in the development and implementation of new environmentally sound low-waste technologies and the improvement of existing technologies with a view to eliminating, as far as practicable, the generation of hazardous wastes and other wastes and achieving more effective and efficient methods of ensuring their management in an environmentally sound manner, including the study of the economic, social and environmental effects of the adoption of such new or improved technologies;
 - (d) Co-operate actively, subject to their national laws, regulations and policies, in the transfer of technology and management systems related to the environmentally sound management of hazardous wastes and other wastes.

They shall also co-operate in developing the technical capacity among Parties, especially those which may need and request technical assistance in this field;

- (e) Co-operate in developing appropriate technical guidelines and/or codes of practice.

3. The Parties shall employ appropriate means to co-operate in order to assist developing countries in the implementation of subparagraphs a, b, c and d of paragraph 2 of Article 4.

4. Taking into account the needs of developing countries, co-operation between Parties and the competent international organizations is encouraged to promote, *inter alia*, public awareness, the development of sound management of hazardous wastes and other wastes and the adoption of new low-waste technologies.

Article 14

Financial Aspects

1. The Parties agree that, according to the specific needs of different regions and subregions, regional or sub-regional centres for training and technology transfers regarding the management of hazardous wastes and other wastes and the minimization of their generation should be established. the Parties shall decide on the establishment of appropriate funding mechanisms of a voluntary nature.

* * *

9. Convention on Biological Diversity*

Acknowledging that the provision of new and additional financial resources and appropriate access to relevant technologies can be expected to make a substantial difference in the world's ability to address the loss of biological diversity,

Acknowledging further that special provision is required to meet the needs of developing countries, including the provision of new and additional financial resources and appropriate access to relevant technologies,

Noting in this regard the special conditions of the least developed countries and small island States,

Acknowledging that substantial investments are required to conserve biological diversity and that there is the expectation of a broad range of environmental, economic and social benefits from those investments,

Aware that conservation and sustainable use of biological diversity is of critical importance for meeting the food, health and other needs of the growing world population, for which purpose access to and sharing of both genetic resources and technologies are essential.

Article 1

Objectives

The objectives of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

Article 16

Access to and Transfer of Technology

1. Each Contracting Party, recognizing that technology includes biotechnology, and that both access to and transfer of technology among Contracting Parties are essential elements for the attainment of the objectives of this Convention, undertakes subject to the provisions of this Article to provide and/or facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environment.

2. Access to and transfer of technology referred to in paragraph 1 above to developing countries shall be provided and/or facilitated under fair and most favourable terms, including on concessional and preferential terms where mutually agreed, and, where

* CBD (1992):
International Legal Materials, Volume 31, Number 4, July 1992; and <<http://www.unep.ch/bio/conv-e.html>>
and <<http://www.biodiv.org/convention/articles.asp?lg=0>>

necessary, in accordance with the financial mechanism established by Articles 20 and 21. In the case of technology subject to patents and other intellectual property rights, such access and transfer shall be provided on terms which recognize and are consistent with the adequate and effective protection of intellectual property rights. The application of this paragraph shall be consistent with paragraphs 3, 4 and 5 below.

3. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that Contracting Parties, in particular those that are developing countries, which provide genetic resources are provided access to and transfer of technology which makes use of those resources, on mutually agreed terms, including technology protected by patents and other intellectual property rights, where necessary, through the provisions of Articles 20 and 21 and in accordance with international law and consistent with paragraphs 4 and 5 below.

4. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, with the aim that the private sector facilitates access to, joint development and transfer of technology referred to in paragraph 1 above for the benefit of both governmental institutions and the private sector of developing countries and in this regard shall abide by the obligations included in paragraphs 1, 2 and 3 above.

5. The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.

Article 17

Exchange of Information

1. The Contracting Parties shall facilitate the exchange of information, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries.

2. Such exchange of information shall include exchange of results of technical, scientific and socio-economic research, as well as information on training and surveying programmes, specialized knowledge, indigenous and traditional knowledge as such and in combination with the technologies referred to in Article 16, paragraph 1. It shall also, where feasible, include repatriation of information.

Article 18

Technical and Scientific Cooperation

1. The Contracting Parties shall promote international technical and scientific cooperation in the field of conservation and sustainable use of biological diversity, where necessary, through the appropriate international and national institutions.

2. Each Contracting Party shall promote technical and scientific cooperation with other Contracting Parties, in particular developing countries, in implementing this Convention, *inter alia*, through the development and implementation of national policies. In promoting such cooperation, special attention should be given to the development and

strengthening of national capabilities, by means of human resources development and institution building.

3. The Conference of the Parties, at its first meeting, shall determine how to establish a clearing-house mechanism to promote and facilitate technical and scientific cooperation.

4. The Contracting Parties shall, in accordance with national legislation and policies, encourage and develop methods of cooperation for the development and use of technologies, including indigenous and traditional technologies, in pursuance of the objectives of this Convention. For this purpose, the Contracting Parties shall also promote cooperation in the training of personnel and exchange of experts.

5. The Contracting Parties shall, subject to mutual agreement, promote the establishment of joint research programmes and joint ventures for the development of technologies relevant to the objectives of this Convention.

Article 19

Handling of Biotechnology and Distribution of its Benefits

1. Each Contracting Party shall take legislative, administrative or policy measures, as appropriate, to provide for the effective participation in biotechnological research activities by those Contracting Parties, especially developing countries, which provide the genetic resources for such research, and where feasible in such Contracting Parties.

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

3. The Parties shall consider the need for and modalities of a protocol setting out appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity.

4. Each Contracting Party shall, directly or by requiring any natural or legal person under its jurisdiction providing the organisms referred to in paragraph 3 above, provide any available information about the use and safety regulations required by that Contracting Party in handling such organisms, as well as any available information on the potential adverse impact of the specific organisms concerned to the Contracting Party into which those organisms are to be introduced.

Article 20

Financial Resources

4. The extent to which developing country Parties will effectively implement their commitments under this Convention will depend on the effective implementation by

developed country Parties of their commitments under this Convention related to financial resources and transfer of technology and will take fully into account the fact that economic and social development and eradication of poverty are the first and overriding priorities of the developing country Parties.

5. The Parties shall take full account of the specific needs and special situation of least developed countries in their actions with regard to funding and transfer of technology.

Article 25.

Subsidiary Body on Scientific, Technical and Technological Advice

1. A subsidiary body for the provision of scientific, technical and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely advice relating to the implementation of this Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the authority of and in accordance with guidelines laid down by the Conference of the Parties, and upon its request, this body shall:

(a) Provide scientific and technical assessments of the status of biological diversity;

(b) Prepare scientific and technical assessments of the effects of types of measures taken in accordance with the provisions of this Convention;

(c) Identify innovative, efficient and state-of-the-art technologies and know-how relating to the conservation and sustainable use of biological diversity and advise on the ways and means of promoting development and/or transferring such technologies;

(d) Provide advice on scientific programmes and international cooperation in research and development related to conservation and sustainable use of biological diversity; and

(e) Respond to scientific, technical, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

3. The functions, terms of reference, organization and operation of this body may be further elaborated by the Conference of the Parties.

* * *

10. Cartagena Protocol on Biosafety to the Convention on Biological Diversity*

Reaffirming the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development,

Aware of the rapid expansion of modern biotechnology and the growing public concern over its potential adverse effects on biological diversity, taking also into account risks to human health,

Recognizing that modern biotechnology has great potential for human well-being if developed and used with adequate safety measures for the environment and human health,

Article 20

Information sharing and the Biosafety Clearing-House

1. A Biosafety Clearing-House is hereby established as part of the clearing-house mechanism under Article 18, paragraph 3, of the Convention, in order to:

- (a) Facilitate the exchange of scientific, technical, environmental and legal information on, and experience with, living modified organisms; and

Article 22

Capacity-building

1. The Parties shall cooperate in the development and/or strengthening of human resources and institutional capacities in biosafety, including biotechnology to the extent that it is required for biosafety, for the purpose of the effective implementation of this Protocol, in developing country Parties, in particular the least developed and small island developing States among them, and in Parties with economies in transition, including through existing global, regional, subregional and national institutions and organizations and, as appropriate, through facilitating private sector involvement.

2. For the purposes of implementing paragraph 1 above, in relation to cooperation, the needs of developing country Parties, in particular the least developed and small island developing States among them, for financial resources and access to and transfer of technology and know-how in accordance with the relevant provisions of the Convention, shall be taken fully into account for capacity-building in biosafety. Cooperation in capacity-building shall, subject to the different situation, capabilities and requirements of each Party, include scientific and technical training in the proper and safe management of biotechnology, and in the use of risk assessment and risk management for biosafety, and the enhancement of technological and institutional capacities in biosafety. The needs of Parties with economies in transition shall also be taken fully into account for such capacity-building in biosafety.

* * *

* Cartagena Protocol (2000): *International Legal Materials*, Volume 39, Number 5, September 2000; and <<http://www.biodiv.org>>.

11. Convention on the Transboundary Effects of Industrial Accidents*

Affirming the need to promote active international cooperation among the States concerned before, during and after an accident, to enhance appropriate policies and to reinforce and coordinate action at all appropriate levels for promoting the prevention of, preparedness for and response to the transboundary effects of industrial accidents,

Article 15

Exchange of information

The Parties shall, at the multilateral or bilateral level, exchange reasonably obtainable information, including the elements contained in Annex`XI hereto.

Article 16

Exchange of technology

1. The Parties shall, consistent with their laws, regulations and practices, facilitate the exchange of technology for the prevention of, preparedness for and response to the effects of industrial accidents, particularly through the promotion of:

- (a) Exchange of available technology on various financial bases;
- (b) Direct industrial contacts and cooperation;
- (c) Exchange of information and experience;
- (d) Provision of technical assistance.

2. In promoting the activities specified in paragraph 1, subparagraphs (a) to (d) of this Article, the Parties shall create favourable conditions by facilitating contacts and cooperation among appropriate organizations and individuals in both the private and the public sectors that are capable of providing technology, design and engineering services, equipment or finance.

ANNEX XI

EXCHANGE OF INFORMATION PURSUANT TO ARTICLE 15

Information shall include the following elements, which can also be the subject of multilateral and bilateral cooperation:

[...]

- (c) Programmes for monitoring, planning, research and development, including their implementation and surveillance;

[...]

- (f) The development and application of the best available technologies for improved environmental protection and safety;

* * *

* Industrial Accidents Convention (1992):

International Legal Materials, Volume 31, Number 6, November 1992; and

<<http://www.unece.org/env/teia/english/text.htm>> and <<http://www.unece.org/leginstr/cover.htm>>

12. United Nations Framework Convention on Climate Change*

Acknowledging that change in the Earth's climate and its adverse effects are a common concern of humankind,

Recognizing that various actions to address climate change can be justified economically in their own right and can also help in solving other environmental problems,

Recognizing that all countries, especially developing countries, need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general, including through the application of new technologies on terms which make such an application economically and socially beneficial,

Article 4

Commitments

1. All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall:
 - (c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors;
 - (g) Promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;
 - (h) Promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;
 - (i) Promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non- governmental organizations; and

4. The developed country Parties and other developed Parties included in Annex II shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects.

* Climate Change (1992):
International Legal Materials, Volume 31, Number 4, July 1992; and
<<http://www.unfccc.de/resource/convkp.html>>

5. The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and know-how to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.

7. The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties.

8. In the implementation of the commitments in this Article, the Parties shall give full consideration to what actions are necessary under the Convention, including actions related to funding, insurance and the transfer of technology, to meet the specific needs and concerns of developing country Parties arising from the adverse effects of climate change and/or the impact of the implementation of response measures, especially on:

- (a) Small island countries;
- (b) Countries with low-lying coastal areas;
- (c) Countries with arid and semi-arid areas, forested areas and areas liable to forest decay;
- (d) Countries with areas prone to natural disasters;
- (e) Countries with areas liable to drought and desertification;
- (f) Countries with areas of high urban atmospheric pollution;
- (g) Countries with areas with fragile ecosystems, including mountainous ecosystems;
- (h) Countries whose economies are highly dependent on income generated from the production, processing and export, and/or on consumption of fossil fuels and associated energy-intensive products; and
- (i) Land-locked and transit countries.

Further, the Conference of the Parties may take actions, as appropriate, with respect to this paragraph.

9. The Parties shall take full account of the specific needs and special situations of the least developed countries in their actions with regard to funding and transfer of technology.

10. The Parties shall, in accordance with Article 10, take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change. This applies notably to Parties with economies that are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels and associated energy-intensive products and/or the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives.

Article 5

Research and Systematic Observation

In carrying out their commitments under Article 4, paragraph 1(g), the Parties shall:

[...]

- (b) Support international and intergovernmental efforts to strengthen systematic observation and national scientific and technical research capacities and capabilities, particularly in developing countries, and to promote access to, and the exchange of, data and analyses thereof obtained from areas beyond national jurisdiction; and
- (c) Take into account the particular concerns and needs of developing countries and cooperate in improving their endogenous capacities and capabilities to participate in the efforts referred to in subparagraphs (a) and (b) above.

Article 9

Subsidiary body for scientific and technological advice

1. A subsidiary body for scientific and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely information and advice on scientific and technological matters relating to the Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the guidance of the Conference of the Parties, and drawing upon existing competent international bodies, this body shall:

- (a) provide assessments of the state of scientific knowledge relating to climate change and its effects;
- (b) Prepare scientific assessments on the effects of measures taken in the implementation of the Convention;
- (b) identify innovative, efficient and state-of-the-art technologies and know-how and advise on the ways and means of promoting development and/or transferring such technologies;
- (d) provide advice on scientific programmes, international cooperation in research and development related to climate change, as well as on ways and means of supporting endogenous capacity-building in developing countries; and
- (e) respond to scientific, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

3. The functions and terms of reference of this body may be further elaborated by the Conference of the Parties.

Article 11

Financial mechanism

1. A mechanism for the provision of financial resources on a grant or concessional basis, including for the transfer of technology, is hereby defined. It shall function under the guidance of and be accountable to the Conference of the Parties, which shall decide on its policies, programme priorities and eligibility criteria related to this Convention. Its operation shall be entrusted to one or more existing international entities.

2. The financial mechanism shall have an equitable and balanced representation of all Parties within a transparent system of governance.

5. The developed country Parties may also provide and developing country Parties avail themselves of, financial resources related to the implementation of the Convention through bilateral, regional and other multilateral channels.

* * *

13. Kyoto Protocol to the United Nations Framework Convention on Climate Change*

Article 10

All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, without introducing any new commitments for Parties not included in Annex I, but reaffirming existing commitments under Article 4, paragraph 1, of the Convention, and continuing to advance the implementation of these commitments in order to achieve sustainable development, taking into account Article 4, paragraphs 3, 5 and 7, of the Convention, shall:

- (a) Formulate, where relevant and to the extent possible, cost-effective national and, where appropriate, regional programmes to improve the quality of local emission factors, activity data and/or models which reflect the socio-economic conditions of each Party for the preparation and periodic updating of national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties, and consistent with the guidelines for the preparation of national communications adopted by the Conference of the Parties;
- (b) Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change and measures to facilitate adequate adaptation to climate change:
 - (i) Such programmes would, *inter alia*, concern the energy, transport and industry sectors as well as agriculture, forestry and waste management. Furthermore, adaptation technologies and methods for improving spatial planning would improve adaptation to climate change; and
 - (ii) Parties included in Annex I shall submit information on action under this Protocol, including national programmes, in accordance with Article 7; and other Parties shall seek to include in their national communications, as appropriate, information on programmes which contain measures that the Party believes contribute to addressing climate change and its adverse impacts, including the abatement of increases in greenhouse gas emissions, and enhancement of and removals by sinks, capacity building and adaptation measures;
- (c) Cooperate in the promotion of effective modalities for the development, application and diffusion of, and take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound

* Kyoto Protocol (1992):

International Legal Materials, Volume 37, Number 1, January 1998; and

<<http://www.unfccc.de/resource/convkp.html>> and <<http://untreaty.un.org/English/notpubl/kyoto-en.htm>>

technologies, know-how, practices and processes pertinent to climate change, in particular to developing countries, including the formulation of policies and programmes for the effective transfer of environmentally sound technologies that are publicly owned or in the public domain and the creation of an enabling environment for the private sector, to promote and enhance the transfer of, and access to, environmentally sound technologies;

(d) Cooperate in scientific and technical research and promote the maintenance and the development of systematic observation systems and development of data archives to reduce uncertainties related to the climate system, the adverse impacts of climate change and the economic and social consequences of various response strategies, and promote the development and strengthening of endogenous capacities and capabilities to participate in international and intergovernmental efforts, programmes and networks on research and systematic observation, taking into account Article 5 of the Convention;

(e) Cooperate in and promote at the international level, and, where appropriate, using existing bodies, the development and implementation of education and training programmes, including the strengthening of national capacity building, in particular human and institutional capacities and the exchange or secondment of personnel to train experts in this field, in particular for developing countries, and facilitate at the national level public awareness of, and public access to information on, climate change. Suitable modalities should be developed to implement these activities through the relevant bodies of the Convention, taking into account Article 6 of the Convention;

(f) Include in their national communications information on programmes and activities undertaken pursuant to this Article in accordance with relevant decisions of the Conference of the Parties; and

(g) Give full consideration, in implementing the commitments under this Article, to Article 4, paragraph 8, of the Convention.

Article 11

1. In the implementation of Article 10, Parties shall take into account the provisions of Article 4, paragraphs 4, 5, 7, 8 and 9, of the Convention.

2. In the context of the implementation of Article 4, paragraph 1, of the Convention, in accordance with the provisions of Article 4, paragraph 3, and Article 11 of the Convention, and through the entity or entities entrusted with the operation of the financial mechanism of the Convention, the developed country Parties and other developed Parties included in Annex II to the Convention shall:

(a) Provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in advancing the implementation of existing commitments under Article 4, paragraph 1(a), of the Convention that are covered in Article 10, subparagraph (a); and

(b) Also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of advancing the implementation of existing commitments under Article 4, paragraph 1, of the Convention that are covered by Article 10 and that are agreed between a developing country Party and the international entity or entities referred to in Article 11 of the Convention, in accordance with that Article.

The implementation of these existing commitments shall take into account the need for adequacy and predictability in the flow of funds and the importance of appropriate burden sharing among developed country Parties. The guidance to the entity or entities entrusted with the operation of the financial mechanism of the Convention in relevant decisions of the Conference of the Parties, including those agreed before the adoption of this Protocol, shall apply *mutatis mutandis* to the provisions of this paragraph.

3. The developed country Parties and other developed Parties in Annex II to the Convention may also provide, and developing country Parties avail themselves of, financial resources for the implementation of Article 10, through bilateral, regional and other multilateral channels.

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14. United Nations Conference on Environment and Development: Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests*

8. (a) Efforts should be undertaken towards the greening of the world. All countries, notably developed countries, should take positive and transparent action towards reforestation, afforestation and forest conservation, as appropriate.
- (g) Access to biological resources, including genetic material, shall be with due regard to the sovereign rights of the countries where the forests are located and to the sharing on mutually agreed terms of technology and profits from biotechnology products that are derived from these resources.

11. In order to enable, in particular, developing countries to enhance their endogenous capacity and to better manage, conserve and develop their forest resources, the access to and transfer of environmentally sound technologies and corresponding know-how on favourable terms, including on concessional and preferential terms, as mutually agreed, in accordance with the relevant provisions of Agenda 21, should be promoted, facilitated and financed, as appropriate.

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* Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests (1992):
International Legal Materials, Volume 31, Number 4, July 1992

15. United Nations Conference on Environment and Development: Rio Declaration on Environment and Development*

Principle 7

States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem. In view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

[...]

Principle 9

States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies.

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* Rio Declaration on Environment and Development (1992):
International Legal Materials, Volume 31, Number 4, July 1992.

16. Establishment Agreement for the Center for International Forestry Research^{*}

Article 4

Purpose

1. The purpose of the Center is to contribute to the sustained well-being of people in developing countries, particularly in the tropics, through collaborative strategic and applied research and related activities in forest systems and forestry, and by promoting the transfer of appropriate new technologies and the adoption of new methods of social organization, for national development.

2. By "forestry" is meant the science, the art and the practice of managing and using for human benefit the natural resources that occur on and in association with lands bearing forest or with a forest vocation. A "forest system" is a functional complex of forest and its biophysical, social, cultural, economic and political environment.

[...]

- (d) A recognition that research must remain relevant to and serve the needs of developing countries in their efforts to achieve sustainable land-use practices, minimise further degradation of forested lands and promote social equity.

Article 6

Activities

2. CIFOR shall formulate a research program to underpin the science of forestry, by developing and maintaining the necessary scientific and technological base and the necessary staff expertise. This program shall be directed towards innovation and technology development and the transfer of the results of such work to CIFOR's stakeholders for the ultimate benefit of people in developing countries.

3. CIFOR shall operate through a variety of mechanisms suited to the needs of its constituent programs, including networking, collaborative and contractual arrangements, and in-house research.

4. CIFOR shall monitor forestry research globally and shall obtain and process information relevant to developing countries. CIFOR shall act as a distributor of this information where and when it is needed.

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^{*} Agreement for the Center for International Forestry Research (1993):
Center for International Forestry Research (CIFOR); 1736 *United Nations Treaty Series*, 169-183.

17. The Energy Charter Treaty*

Determined progressively to remove technical, administrative and other barriers to trade in Energy Materials and Products and related equipment, technologies and services;

Article 8

Transfer of Technology

1. The Contracting Parties agree to promote access to and transfer of energy technology on a commercial and non-discriminatory basis to assist effective trade in Energy Materials and Products and Investment and to implement the objectives of the Charter subject to their laws and regulations, and to the protection of Intellectual Property rights.

2. Accordingly, to the extent necessary to give effect to paragraph (1) the Contracting Parties shall eliminate existing and create no new obstacles to the transfer of technology in the field of Energy Materials and Products and related equipment and services, subject to non-proliferation and other international obligations.

Article 19

Environmental Aspects

1. In pursuit of sustainable development and taking into account its obligations under those international agreements concerning the environment to which it is party, each Contracting Party shall strive to minimize in an economically efficient manner harmful Environmental Impacts occurring either within or outside its Area from all operations within the Energy Cycle in its Area, taking proper account of safety. In doing so each Contracting Party shall act in a Cost-Effective manner. In its policies and actions each Contracting Party shall strive to take precautionary measures to prevent or minimize environmental degradation. The Contracting Parties agree that the polluter in the Areas of Contracting Parties, should, in principle, bear the cost of pollution, including transboundary pollution, with due regard to the public interest and without distorting Investment in the Energy Cycle or international trade. Contracting Parties shall accordingly:

- (d) have particular regard to Improving Energy Efficiency, to developing and using renewable energy sources, to promoting the use of cleaner fuels and to employing technologies and technological means that reduce pollution;
- (e) promote the collection and sharing among Contracting Parties of information on environmentally sound and economically efficient energy policies and Cost-Effective practices and technologies;

* The Energy Charter Treaty (1994):
The Energy Charter Conference (1995). *Final Act of the European Energy Charter Conference* (Document AF/FECH/en 1); *The Energy Charter Treaty* (Document EECH/A2/en 1); and
<<http://www.encharter.org/English/FullText/Treaty.html>>