International Plant Exchange Network (IPEN)

An exchange system for botanic gardens for non-commercial purposes according to the CBD

Abstract

Botanic gardens have a long standing tradition in botanical and horticultural teaching and research. Today, they also play an important role in environmental education, as well as in ex-situ and in-situ conservation. Through this work, they contribute significantly to the implementation of the Convention on Biological Diversity (CBD). Thus, the access and benefit-sharing regulations of the CBD (§ 15) are of special importance for botanic gardens.

In this context much work has been done by botanic gardens towards the development of a model for voluntary implementation of the CBD's Access and Benefit Sharing (ABS) provisions. Initiated by pilot projects at Bonn Botanic Gardens on behalf of the German Association of Botanic Gardens (VBG. e.V.) an "International Plant Exchange Network (IPEN)" was developed and adopted by the BGCI/IABG-Consortium of Botanic Gardens in the EU. The Consortium sticks up for the implementation of the IPEN.

The base of the IPEN is the registration of botanic gardens declaring their adoption of a common policy (Code of Conduct) which is in compliance with the obligations of the CBD. This registration is limited to botanic gardens only. The IPEN covers

- transfer of living plant material from countries of origin to botanic gardens
- plant exchange between registered botanic gardens
- supply of plant material to not registered gardens and other institutions
- sharing of benefits arising from non-commercial use (e.g. basic research).

Exchange and supply within the IPEN is only applicable for non-commercial purposes. For commercial purposes, individual agreements between the countries of origin and the users are obligatory.

By creating a system that is transparent to countries providing plant material, and by the inclusion of regulations for sharing benefits with these countries of origin, it is hoped that the IPEN will create confidence in the work of botanic gardens worldwide and thus facilitate their access to genetic resources. At the same time it is intended to minimize bureaucracy for plant exchange between botanic gardens within the scope of their traditional seed exchange.

1 Introduction

It is estimated that the 1800 botanic gardens worldwide maintain more than 80.000 plant species: thus almost one-third of the total number of higher plant species is cultivated in botanic gardens. Often they maintain herbaria, seed banks, etc., or have a close cooperation with such facilities. Botanic gardens also play an important role in education and research regarding plant conservation issues. This makes botanic gardens stakeholders in the implementation of the Convention on Biological Diversity.

For botanic gardens throughout the world, international seed exchange is an important mechanism for acquiring and safeguarding plant material. This exchange system runs within a more or less closed circuit of botanic gardens and other botanic research organisations. International seed exchange has a long-standing tradition, going back to the 18th century. Its purpose has always been mainly non-commercially. In addition, international seed exchange is the single most important source of plants for the great majority of botanic gardens in the world, as collecting from wild sources is not always practical or desirable. The exchange takes place free of charge. This facilitated access not only serves science and conservation, but also education and recreation of the general public.

After the entry into force of the CBD in December 1993, botanic gardens have considered how to comply with the Convention. Much work has already been done towards the development of a model for voluntary implementation of the CBD's Access and Benefit Sharing (ABS) provisions by botanic gardens.

From the end of 1996 to 2002, the German Ministry of Environment funded several research and development projects on botanic gardens and their contribution to the implementation of the CBD, based at the Bonn botanic gardens. A main objective of these projects was to promote the process of discussing ABS issues within the botanic gardens in Germany and the Association of Botanic Gardens (Verband Botanischer Gärten e.V., VBG). In the German project representatives of 34 botanic gardens from Austria, Germany and German-speaking Switzerland took part and developed a Code of Conduct for Botanic Gardens. The Association of Botanic Gardens established a working group "CBD" that enhanced this Code of Conduct and developed the International Plant Exchange Network (IPEN) as presented here.

At the same time, the UK Department for International Development funded an international pilot project based at Royal Botanic Gardens, Kew, on "Botanic Garden's policy on Access to Genetic Resources and Benefit Sharing". Representatives of 28 botanic gardens from 21 countries participated in the project. The aim was to develop harmonized policies/guidelines for botanic gardens on access to genetic resources and benefit-sharing. The project group agreed upon "Principles on access to genetic resources and benefit-sharing for participating institutions" (http://www.kew.org.uk/conservation). By the participation of Bonn Botanic Gardens as well in the German project and in the international pilot project a continuous exchange of ideas between the two projects took place.

Both, the "Principles" and the "IPEN" are to clarify the position of botanic gardens on ABS and to facilitate exchange of genetic resources within the botanic gardens community. The Principles demand the development of institutional policies for implementation. The "International Plant Exchange Network (IPEN)", as presented here, is based on the "IPEN Code of Conduct" and provides a mechanism for its implementation. While the Principles are an overall approach covering all obligations of the CBD,

the IPEN serves only for the exchange of plant material within botanic gardens and only for non-commercial purposes. Gardens that expect to be involved in some commercialisation of material, or that want a system to cover exchange of their other collections (e.g. dried herbarium material) should consider also adopting the 'Principles on Access and Benefit Sharing for Participating Institutions'.

Both approaches take into account the relevant paragraphs of both the International Agenda for Botanic Gardens in Conservation (BGCI 2000), and the Action Plan for Botanic Gardens in the European Union (Cheney et al. 2000), that refer to the implementation of the Convention. They also are in line with the "Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization" (adopted by the Conference of the Parties, decision VI/24) and with the "Global Strategy for Plant Conservation" (adopted by the Conference of the Parties, decision VI/9).

The International Plant Exchange Network is supported and will be promoted by the European Consortium of Botanic Gardens, the platform of official representatives of the national networks of botanic gardens of each EU country. The European Consortium has established an IPEN Task Force to promote the implementation of the IPEN first within the EU botanic gardens and in a second step worldwide. The IPEN is now in the process of being considered for adoption by the national networks of botanic gardens in European countries or has already been adopted.

2 Description of the International Plant Exchange Network (IPEN)

The base of the IPEN is a common policy of all member gardens: the "IPEN Code of Conduct for botanic gardens and similar collections governing the acquisition, maintenance and supply of living plant material" (see below). The Code of Conduct covers only the transfer of living plant material for non-commercial purposes and complies with the obligations of the CBD.

The membership in the IPEN is only possible for botanic gardens[1]. Any individual botanic garden that wants to become member of the International Plant Exchange Network sends a written declaration to BGCI (see annex 1) that it intends to comply with the "IPEN Code of Conduct".

Any national network of Botanic Gardens elects a National Node for IPEN. The National Nodes form a National Node Network. The National Node Network decides about the membership in the IPEN. After 5 years the registration must be renewed. The current participating botanic gardens are listed in annex 2.

Contact group for any questions concerning IPEN is the "IPEN task force" consisting of members of the IABG/BGCI Consortium of Botanic Gardens in the European Union. They will run a Question and Answer Service at the BGCI website.

IPEN Code of Conduct

for botanic gardens[1] governing the acquisition, maintenance and supply of living plant material[2]

The conservation of the Earth's biological diversity is the responsibility of all humankind. Throughout their history, botanic gardens have made an essential and indispensable contribution to preserving the diversity of plant life. The *Convention on Biological Diversity* (CBD, Rio de Janeiro, 1992) respects the sovereignty of individual countries over their own biological resources as elements of biological diversity.

In compliance with this Code of Conduct, botanic gardens and their employees contribute to implementing the goals of the Convention on Biological Diversity.

Under this Code of Conduct, the garden commits itself with regard to acquiring, maintaining, and transferring living plant material to act within the framework of the CBD and the Convention on International Trade in Endangered Species (CITES). In addition, the garden will endeavour to act in compliance with further national and international laws.

Member gardens of the International Plant Exchange Network will act under the following Code:

1. Acquisition: How plant material enters the International Plant Exchange Network

a. To the best of its knowledge, the garden shall only accept plant material (including material derived from in-situ and ex-situ conditions) which has been acquired in accordance with the provisions of the CBD and further national and international laws related to the protection and sustainable use of biological diversity, access to genetic resources, associated knowledge, and benefit sharing, as far as can be ascertained.

b. When acquiring plant material from in situ conditions, the garden shall obtain information on the country of origin's access laws and the procedures for obtaining Prior Informed Consent and relevant permits. One source of this information is from the national focal point of the CBD (or the national focal point for ABS, if one exists).

c. When acquiring plant material from ex situ conditions the PIC will be obtained according to national law from the institution that holds the collection[3].

1.1 Procedure of material entering the IPEN

Not all the plant material of a botanic garden that is IPEN member garden is automatically to be distributed within IPEN. Material entering the IPEN means material that is supplied by one IPEN member to another. The terms and conditions under which the plant material was acquired have to be kept. That means only plant material that was acquired without restrictions in respect of its use or its supply to third parties may enter the International Plant Exchange Network and be exchanged within it (see also "1.2 Material unsuitable for the International Plant Exchange Network").

In case of being the first garden supplying a specific plant sample (accession) within IPEN this garden has to provide the material with an IPEN-number consisting of an acronym of the country of origin, a note about the existence of any restrictions, the acronym of the first supplying garden and a identifica-

[1] ‚Botanic gardens are institutions holding documented collections of living plants for the purposes of scientific research, conservation, display and education' (Wyse Jackson, BGCI 1999)

[2] According to the CBD "genetic resources" means genetic material of actual or potential value. This definition covers both living and not living material. The Code of Conduct and the IPEN covers only the exchange of living plant material (living plants or parts of plants, diaspores) thus falling in the definition of genetic resources.

[3] When requesting plant material for non-commercial purposes, the request will automatically be considered as a request for the PIC. A positive response, i.e. the supply of the requested material, will be considered as granting the PIC.

tion number (see annex 3). Furthermore, the material that shall be supplied as well as the terms under which it was introduced have to be documented by the supplying IPEN garden (e.g. with the "documentation sheet for plant material entering the International Plant Exchange Network ", annex 4).
In case of receiving material from another member of the IPEN it is sufficient to document the information listed in the "Minimum set of data to be documented in any case of transfer of plant material" (annex 5).

1.2 Material unsuitable for the IPEN

If the terms and conditions under which the material was acquired do not allow the transfer to third parties, this material cannot enter the IPEN.
Even in the case that the transfer to third parties is allowed but other restrictions are given the material may be unsuitable for the network. Examples for imaginable restrictions:

- the country of origin wants to be informed about any plant transfer in advance
- the use for public display is not allowed
- annual reports on the use of plant material are requested by the country of origin
- etc.

Theoretically it would be possible to exchange such material within the IPEN because the IPEN-number includes a code for the restrictions (see annex 3), so the recipient garden may get the information on the specific restrictions. But, in practice it would be very difficult to honour the restrictions in such a dispersed network. Therefore such material is unsuitable for the network and should not be circulated within it.

1.3 Pre and post CBD material

Botanic gardens are strongly advised to treat all plant material 'as if' acquired after the CBD came into effect and therefore subject to the CBD. By doing so, it should be clear however that no responsibility is accepted for retroactive benefit-sharing claims regarding commercial use of plants acquired before the CBD came into effect.

2. Maintenance: What happens with the material within the IPEN member gardens?

2.1 Curation/Documentation

For the purposes of conserving biological diversity, supporting scientific study, education and benefit-sharing, the garden will make best efforts to ensure the care and cultivation of the plants entrusted to it and to keep the relevant information, especially the terms under which the plant material was acquired.

That means they need to use a database or record system that tracks all relevant data as plant material comes in and out of the garden. International standards on data exchange and taxonomic databases (e.g. by the Taxonomic Databases Working Group, http://www.bgbm.org/TDWG/) should be considered. The database must easily distinguish between material that is suitable for the IPEN and the unsuitable material.

2.2 Use

Any use of the plant material is restricted to the terms under which it has been acquired. For uses not covered by these terms, the garden commits itself to obtain a new Prior Informed Consent of the country of origin.

Commercial use of the plant material is not covered by the IPEN. In case of intended commercial use and other uses not covered by these terms and conditions, the participating garden commits itself to obtain a new Prior Informed Consent of the country of origin.

2.3 Benefit Sharing

In the spirit of implementing the objectives of the CBD, the garden shall endeavour to share benefits resulting from the use of plant material with the country of origin. Since the garden‘s use of the material covered by this exchange network is non-commercial, such benefit sharing will be non-monetary.

The following list includes examples of non-monetary benefit sharing which are already in practice among botanic gardens and are based on co-operation with partner institutions:

- joint expeditions and projects with a partner institution in the country of origin
- knowledge and know-how transfer
- technical support
- exchange of gardeners and other staff
- reintroduction of threatened plant species
- joint publications with scientists and institutions from the country of origin or
- publication of research results in the country of origin or at least providing access to the research results in the country of origin

3. Supply

3.1 Supply of plant material within the International Plant Exchange Network

1. Plant material will be supplied under the same terms under which it was acquired.
2. The supply of plant material includes the transfer of information connected to the material especially data relevant for benefit sharing with the country of origin (see "Minimum set of data to be documented in any case of transfer of plant material", annex 5).

3.2 Supply of plant material outside the International Plant Exchange Network

1. Plant material will be supplied under the same terms under which it was acquired.
2. The supply of plant material includes the transfer of information connected to the material, especially data relevant for benefit sharing with the country of origin (see "Minimum set of data to be documented in any case of transfer of plant material", annex 5).
3. The garden supplies plant material for non commercial uses by using the „Agreement on the supply of plant material for non-commercial purposes leaving the International Plant Exchange Network" (annex 6). By signing this Agreement the recipients commit themselves to act in compliance with the CBD and its agreed provisions on Access and Benefit-Sharing. This includes a new Prior Informed Consent (PIC) of the country of origin for any uses not covered by terms under which it has been acquired (such as commercialisation).
4. The garden supplies plant material for commercial uses only if adequate evidence is provided that the country of origin's Prior Informed Consent has been granted. In this case, too, it is the recipient's responsibility to ensure an adequate and equitable sharing of benefits with the country of origin. The supply of material for commercial purposes requires a bilateral agreement. Examples for such agreements will be available at the BGCI Homepage soon.

3 Annexes

Annex 1: Registration form

Botanic Gardens Conservation International
199 Kew Road, Descanso House
Richmond Surrey TW9 3BW
United Kingdom

Fax: 0044 181 3325956

International Plant Exchange Network (IPEN) - Registration

As authorised person to represent _____ (name of botanic garden)[4]
I herewith confirm that I have read the above explanatory text on the International Plant Exchange Network including the IPEN Code of Conduct. I declare that the gardens intends to comply with the Code of Conduct and apply for being registered as member of the International Plant Exchange Network.

If the registration will be accepted the garden will be informed and added to the list of registered IPEN members. This list is available at the BGCI Homepage or will be sent by mail on request. Each IPEN member gets an institution acronym (Garden Code) according to the BGCI list. If no acronym exists a new one will be created by BGCI.

Name and address of the botanic garden, stamp:

location, date_____ signature_____

[4] in the following referred to as „garden“

Annex 2: List of registered botanic gardens (Institution, date of registration, IPEN-Code)

Last update 10/2005

Austria
Botanischer Garten der Stadt Linz
Botanischer Garten der Universität Wien
Botanischer Garten der Universität für Bodenkultur, Wien
Botanischer Garten des Kärntner Botanikzentrums Klagenfurt
Botanischer Garten und Alpengarten Patscherkofel der Universität Innsbruck

France
Conservatoire et Jardins Botaniques de Nancy

Germany
Alter Botanischer Garten der Universität Göttingen
Botanische Gärten der Universität Bonn
Botanische Versuchsstation und Botanischer Garten der Universität Stuttgart
Botanischer Garten München-Nymphenburg
Botanischer Garten der Heinrich-Heine-Universität Düsseldorf
Botanischer Garten der Stadt Altenburg
Botanischer Garten der Stadt Bad Langensalza
Botanischer Garten der Stadt Wuppertal
Botanischer Garten der TU Darmstadt
Botanischer Garten der TU Dresden
Botanischer Garten der Universität Bochum
Botanischer Garten der Universität Frankfurt
Botanischer Garten der Universität Gießen
Botanischer Garten der Universität Halle
Botanischer Garten der Universität Hamburg
Botanischer Garten der Universität Heidelberg
Botanischer Garten der Universität Hohenheim
Botanischer Garten der Universität Mainz
Botanischer Garten der Universität Marburg
Botanischer Garten der Universität Münster
Botanischer Garten der Universität Oldenburg
Botanischer Garten der Universität Osnabrück
Botanischer Garten der Universität Rostock
Botanischer Garten der Universität Saarbrücken
Botanischer Garten der Universität Ulm
Botanischer Garten der Universität Würzburg
Botanischer Garten und Botanisches Museum Berlin-Dahlem
Botanischer Garten und Rhododendronpark Bremen
Flora und Botanischer Garten der Stadt Köln
Forstbotanischer Garten Tharandt der TU Dresden
Forstbotanischer Garten der FH Eberswalde
Forstbotanischer Garten und Arboretum der Universität Göttingen
Neuer Botanischer Garten der Universität Göttingen
Palmengarten der Stadt Frankfurt/Main

Späth-Arboretum der Humboldt-Universität Berlin
Ökologisch-Botanischer Garten der Universität Bayreuth

Luxembourg
Musée national d'histoire naturelle Luxemburg

Netherlands
Ambrosius Farm Bee and Pollination Research, Hilvarenbeek, The Netherlands
Arboretum Oudenbosch, Oudenbosch, The Netherlands
Arboretum Schovenhorst, Putten, The Netherlands
Arboretum Trompenburg, Rotterdam, The Netherlands
Blijdenstein Pinetum, Hilversum, The Netherlands
Blijdorp Zoo, Rotterdam, The Netherlands
Botanic Garden Groningen “Domies Toen”, The Netherlands
Botanic Garden Kerkrade, Kerkrade, The Netherlands
Botanic Garden, TU Delft, Delft, The Netherlands
Botanic Gardens, Wageningen UR, The Netherlands
Burgers’ Zoo, Arnhem, The Netherlands
De Kruidhof, Buitenpost, The Netherlands
Hortus Botanicus of the Leiden University, The Netherlands
Hortus Botanicus, Amsterdam, The Netherlands
Hortus Botanicus, Free University of Amsterdam, Amsterdam, The Netherlands
Hortus Botanicus, Nijmegen University, Nijmegen, The Netherlands
Openluchtmuseum Arnhem, The Netherlands
Orangery "De Groene Parel", Den Helder, The Netherlands
Ouwehands Zoo, Rhenen, The Netherlands
Poort Bulten Arboretum, Losser, The Netherlands
Twickel Foundation, Ambt Delden, The Netherlands
Utrecht University Botanic Gardens, Utrecht, The Netherlands

Sweden
Bergianska trädgården
Botaniska trädgården Uppsala universitet
Göteborgs botaniska trädgård

Switzerland
Botanischer Garten Sankt Gallen
Botanischer Garten Zürich
Botanischer Garten der Universität Bern
merian Park Botanischer Garten der Brüglingen AG Basel

United Kingdom
Royal Botanic Gardens Edinburgh

Annex 3

IPEN-numbers

All plant material supplied by an IPEN member needs to be accompanied by an IPEN-number that remains connected with that material and its derivatives through all generations to come. With the aid of this number it is possible to trace back where and under which conditions the plant material entered the IPEN.

Creation of IPEN-numbers:

The first IPEN member garden that supplies a specific plant sample within the IPEN has to provide this material with an IPEN-number.

The IPEN number consists of four elements:

1. Country of origin (two positions, abbreviation according to a international standardized Country Code list, obtainable by BGCI, “XX” for unknown origin).
2. Restrictions of transfer (one position, “1” if there exist a restriction, “0” if none).
3. Garden Code (from which the IPEN number originates: BGCI provides each new registered IPEN member garden with Garden Code. A list of the Garden Codes will be provided at the BGCI website. Some examples can already be found on the list of registered IPEN members.
4. Identification number (within the institution specified in the previous element, variable number of positions).

Annex 4

Documentation sheet for plant material entering the International Plant Exchange Network

The plant material specified below has been added to the collection of (name of recipient botanic garden) _____ at (date) _____

IPEN-Number (see annex 3):
_____

family _____
genus _____
species _____
ssp/var/forma/cult _____

Type of material: ☐ plants
☐ diaspores

Source of material:

A) In-situ material

☐ directly collected in the wild or from traditional agro-systems

country of origin _____

date of collection _____

collector, collection number _____

B) Ex situ material

Name of the supplying institution: _____

If existing, accession number of the supplying institution for the material: _____

☐ cultivated material with documented wild origin

country of origin _____

date of collection _____

collector, collection number _____

☐ cultivated material with unknown origin

The following permits and certificates exist:

☐ collection permit, issued by _____ at _____
☐ CITES-certificates, issued by _____ at _____
☐ others:
_____
_____
_____

The following terms and conditions on the use of the material that have been made by the country of origin or other stakeholders must be respected:

_____
_____
_____

Annex 5

Minimum set of data to be documented in any case of transfer of plant material

Transferred plant material shall be accompanied by the following information:

(1) IPEN-number (see annex 3), containing the country of origin, a remark on existing restrictions of transfer, the Garden Code of the botanic garden that have introduced the plant to the IPEN,
(2) if a restriction of transfer exists, that means the second element of the IPEN number = 1, the terms and conditions under which the material was acquired from the country of origin and other stakeholders must be specified

Annex 6

Agreement on the supply of living plant material[5] for non-commercial purposes leaving the International Plant Exchange Network

Against the background of the provisions and decisions of the Convention on Biological Diversity of 1992 (CBD) and in particular those on access to genetic resources and benefit-sharing, the garden is dedicated to promoting the conservation, sustainable use, and research of biological diversity. The garden therefore expects its partners in acquiring, maintaining, and transferring plant material to always act in accordance with the CBD and the Convention on the International Trade in Endangered Species (CITES).

The responsibility for legal handling of the plant material passes on to the recipient upon receipt of the material. The requested plant material will be supplied to the recipient only on the following conditions:

1. Based on this agreement, the plant material is supplied only for non-commercial use such as scientific study and educational purposes as well as environmental protection. Should the recipient at a later date intend a commercial use or a transfer for commercial use, the country of origin‘s prior informed consent (PIC) must be obtained in writing before the material is used or transferred. The recipient is responsible for ensuring an equitable sharing of benefits.
2. On receiving the plant material, the recipient endeavours to document the received plant material, its origin (country of origin, first receiving garden, „donor“ of the plant material, year of collection) as well as the acquisition and transfer conditions in a comprehensible manner.
3. In the event that scientific publications are produced based on the supplied plant material, the recipient is obliged to indicate the origin of the material (the supplying garden and if known the country of origin) and to send these publications to the garden and to the country of origin without request.
4. On request, the garden will forward relevant information on the transfer of the plant material to the body charged with implementing the CBD[6].
5. The recipient may transfer the received plant material to third parties only under these terms and conditions and must document the transfer in a suitable manner (e.g. by using the documentation form, such as provided in Annex 1.3).

_____

I accept the above conditions.

Date, Signature Recipient‘s name and address, stamp

[5] According to the CBD “genetic resources” means genetic material of actual or potential value. This definition covers both living and not living material. The Code of Conduct and the IPEN covers only the exchange of living plant material (living plants or parts of plants, diaspores) thus falling in the definition of genetic resources.

[6] ideally, the national focal point in the garden‘s home country