Belgian reply to CBD notification 2010-207 Decision X/16 on Technology transfer and Cooperation

Notification Text

http://www.cbd.int/doc/notifications/2010/ntf-2010-207-tttc-en.pdf

The Conference of the Parties at its tenth meeting, held from 18-29 October 2010 in Nagoya, Japan, adopted decision X/16 on technology transfer and cooperation. In paragraph 2 (a) of this decision, the Conference of the Parties invited Parties and other Governments, as well as relevant international organizations and initiatives, research institutions and the business sector, "to submit to the Executive Secretary information on activities currently being undertaken by international, regional or national organizations and initiatives, including sectoral organizations and initiatives, which support, facilitate, regulate or promote technology transfer and scientific and technological cooperation of relevance to the Convention, such as on:

> *1. Support for technology needs assessments and regulations, including capacity-building for technology assessments;*
> *2. Pertinent capacity-building and training courses;*
> *3. Pertinent seminars and symposia;*
> *4. Information dissemination;*
> *5. Other implementation activities including match-making and catalysing or facilitating the establishment of research-centre networks, alliances or consortia, joint ventures, twinning arrangements, or other proven mechanisms, on technologies of relevance to the Convention."*

As per paragraph 2 (b) of the decision, this information will be analyzed and disseminated through the clearing-house mechanism of the Convention, and other communication mechanisms, with a view to providing concrete and practical information as well as best practices on ongoing activities that support, facilitate, or promote technology transfer and scientific and technological cooperation of relevance to the Convention. It will also be ***used to identify gaps*** *in existing work as well as opportunities to fill these gaps and/or promote synergies,* ***with a view to facilitate the further consideration of supporting the establishment of a Biodiversity Technology Initiative*** *(paragraph 2 (c) of the decision).*

0. Introduction

Notification 2010-207 requests our assistance to identify existing processes and initiatives on technology transfer and cooperation, with a view to fill these gaps and/or promote synergies with a prospective Biodiversity Technology Initiative. The Belgian answer to the notification provides a list of available technologies and technology transfer initiatives related to the CBD in Belgium.

A reminder : what does one mean with technology transfer? What are the types of technologies that can fall under it? In the strategy for the implementation of the Programme of Work on Technology Transfer and cooperation one can find the following:

> *6. The concept of technology as generally understood under the Convention includes both "hard" and "soft" technology. The notion of hard technology refers to the actual machinery and other*

physical hardware that is transferred, while the category of soft technology refers to technological information or know-how. Such "soft" technology is often transferred within long-term scientific and technological cooperation including trough joint research and innovation which move ideas from invention to new products, processes and services.

7. Consistent with the programme of work, local solutions to local issues should be identified and their transfer and use facilitated, as the most innovative solutions are often developed locally, but remain unknown to the a wider community of potential users even though they could be transferred comparatively easily.

In the four national reports that Belgium has submitted to the Secretariat of the CBD, there is already a wealth of information available on technology transfer projects that took place during the reporting timeframe of the reports. The present note provides updated information. It focuses on TT&C by Belgian universities, research institutions and information networks that are funded by Interuniversity Cooperation and by the Belgian Development Cooperation.

1. Support for technology needs assessments and regulations, including capacity-building for technology assessments

Belgium has not actively given support for technology assessments and regulations.

2. Pertinent capacity building initiatives and training courses

2.1. "Soft" technologies and information exchange networks

Belgian Institutions have developed several initiatives related to soft technology and information exchange networks. This chapter gives an overview, in alphabetical order, on some of the relevant networks and their work with developing countries.

African Biodiversity Information Centre (ABIC, Royal Museum for Central Africa):

The purpose of ABIC study visits is to promote, organize and disseminate information, and provide technical and scientific assistance to African researchers in the inventory and sustainable management of their biodiversity. Training in scientific collections management is part of the ABIC programme.
Each year scholarships are granted to research projects that are in line with the commitments of Belgian Development Cooperation under the Convention on Biological Diversity. Individual stays range from two weeks up to two months.
More information: http://www.africamuseum.be/museum/research/collaborations/training/abic

Belgian CHM partnership initiative (Royal Belgian Institute of Natural Sciences)

Since 1999 the Belgian Clearing House Mechanism offers a capacity building program for technical and scientific cooperation and information exchange through the Clearing House Mechanism under the Convention on Biological Diversity. This partnership initiative aims at training national focal points from developing countries and their partners to develop and maintain a national Clearing House Mechanism (CHM). The training programme focuses on building a web-based CHM, using the CHM Portal Toolkit Content Management System, and organizing a national network of participants that are involved in biodiversity information sharing.

Since 1999 more than 400 people from 36 countries have followed one of the following training programmes or participated in regional meetings:

- Training of national focal points in the management of a web-based CHM: 1-2 weeks training course in the use of the CHM Portal Toolkit, a toolkit developed for the European Union CHM and used by over 50 countries.
- National training of partner institutions: A 4-5 day training course that is organized on demand of a partner country in-country.
- Regional training course: a 4-5 day training course for national CHM and thematic focal points.

More information: http://www.biodiv.be/cooperation/chm_coop

Central Africa Biodiversity Information Network (CABIN, Royal Museum for Central Africa)

CABIN is based on the Biological Collection Access Service for Europe, BioCASE, is a transnational network of biological collections of all kinds. BioCASE enables widespread unified access to distributed and heterogeneous European collection and observational databases using open-source, system-independent software and open data standards and protocols. CABIN also offers training courses in digitalizing information from biodiversity collections and adding this information to the GBIF portal. More information: http://gbif.africamuseum.be/CABINPortal/index

FishBase (Royal Museum for Central Africa)

The Royal Museum for Central Africa (RMCA) is part of the FishBase Consortium and responsible for the fresh-and brackish water fishes of Africa.
FishBase is currently the most important online encyclopaedia on fishes and incorporates also many tools for ichthyologists and fisheries biologists. The FishBase programme in the RMCA includes a.o. a continuous update of scientific information on the African ichthyofauna.
As part of the FishBase programme, the RMCA organizes annually a three months training in the use of FishBase and the taxonomy of African fishes

GBIF Belgium-Mauritania Mentoring Programme (Belgian Biodiversity Platform)

Project between the Belgian and Mauritanian GBIF node implemented under the GBIF Mentoring Programme, which aims to promote cooperation and sharing of capacity and expertise among GBIF Participant Nodes. More information:
http://www.gbif.org/communications/news-and-events/showsingle/article/nouakchott-first-gbif-workshop-may-2010/participation/

2.2. Institutional technology transfer

Belgian research institutions and laboratories are doing research on the management of Belgian and global biodiversity. The technologies that they use are shared with collaborating institutions not only in Europe but also elsewhere. In this part you will find an overview of programmes that transfer through capacity building the obtained knowledge and technologies with developing countries.

Belgian GTI capacity building programme (Royal Belgian Institute of Natural Sciences)

Technology transfer is predominantly achieved through training and liberation of existing taxonomic data, knowledge and know-how. However, so-called 'hard' technology transfer has also occurred, but this only in the margin of the capacity building program of the Belgian GTI NFP.

1. Soft technology transfer
Eight calls for proposals for Belgian-based capacity building in taxonomy and/or collection management while providing access to Belgian-based natural history collections and research infrastructure have been launched so far. These calls resulted in nearly 400 applications of which roughly 25% were selected for execution. The technology transfer achieved varied from general training in good practices in taxonomic research to training on taxon-specific techniques, to the transfer of appropriate protocols on good management of voucher specimens and associated data and metadata.
Next to the eight calls for Belgian-based knowledge transfer, the Belgian National Focal Point to the GTI also launched eight calls for projects that aim at increasing taxonomic and curatorial capacity directly in developing countries. Here, 26 projects have been selected so far. Soft technology support ranged from the *in-situ* transfer of knowledge on sampling techniques, to on-the-spot aid in setting up of natural history collections, to the teaching of good practices in data clearing and storage.

2. Hard technology transfer
Hard technology transfer does not constitute the core of the Belgian GTI program. However, when well-formulated demands arrive at the Belgian GTI Office, these are granted support as far as possible. In such a way, support has been given to students and researchers in need of sampling (e.g. collection traps, vials etc), recording (e.g. digital camera, audio equipment etc), storing (e.g. entomological needles, freezer etc) or analytic equipment (e.g. microscope, software etc.)

3. Soft and hard technology transfer together
To speed up taxonomic capacity building the Belgian GTI Focal Point has set up Abc Taxa, a series of manuals devoted to liberating good practices in taxonomy and collection management. The series is distributed worldwide through the GTI and CHM Focal Points whereby developing countries can request additional (free) copies with the Belgian GTO NFP. Each volume is also freely available on the web through the series' website (www.abctaxa.be). So far, 10 volumes have been released.
The series not only groups existing know-how and data in its manuals, but, via its website, also strives to be a portal for beginning taxonomists, for instance by liberating grey literature or by grouping websites devoted to the taxonomy of the taxon under study. When taken to the extreme, the portal becomes a taxonomic clearing house to the group.
More information can be found on: www.taxonomy.be, www.abctaxa.be, www.echinodermata.be

COHERENS (Management Unit of the North Sea Mathematical Models, Royal Belgian Institute of Natural Sciences)

COHERENS is a mathematical model used for the monitoring and management of the near-coastal zone, estuaries, lagoons, reservoirs and lakes. It has been developed at MUMM and is publicly available in the form of free software code. This model serves to forecast the reactions of coastal ecosystems under different sets of physical, chemical and biological conditions. It is particularly useful for environmental impact assessments (e.g. dispersion and impact of potential pollutants) and for the management of coastal seas (e.g. establishment of protected areas or of aquaculture farms). Since its official release in 2000, more than 1,000 potential users have registered to use the model worldwide. Many of these users are based in developing countries. Seven institutes have been selected as partners for this capacity building activity. The aim is to offer them all the tools to apply the model most efficiently to local conditions and to enable them to further disseminate knowledge in using the model. The capacity building and technology transfer programme training and support in the use and further development of the COHERENS model. The cooperation is a highly specialized cooperation in the field of mathematical development and computer modelling.
More information: http://www.mumm.ac.be/EN/Models/Coherens/index.php

Congo Biodiversity Initiative (Congo 2010 Consortium: University of Kisangani, Royal Belgian Institute of Natural Sciences, Royal Museum for Central Africa, National Botanic Garden of Belgium)

Through structural support, and scientific training and research, the *Congo Biodiversity Initiative* wants to help increase and spread knowledge about the natural diversity that exists in the Democratic Republic of Congo. The work of the Congo Biodiversity Initiative rests on three core pillars:

- Mapping of Congolese biodiversity

  In this context the large-scale expedition Boyekoli Ebale Congo 2010 (meaning 'study of the Congo river' in Lingala) was organised. Over five weeks, a multidisciplinary team of 68 scientists from Congo, Belgium and some other European countries collected samples from all around the Congo River, with their subsequent findings to be entered and mapped on a central database.
- Training of scientific staff

  Through training programmes, workshops and cooperative ventures, investment in local researchers aims to support their learning and meet the required standards for integration into international scientific networks. This type of 'capacity building' is very important in the study and research of Congo's biodiversity, and also in contributing to the long-term sustainable management of its natural resources.
- Founding of a study centre to monitor biodiversity

  In the course of 2011 a multidisciplinary Biodiversity Surveillance Centre will open in Kisangani. A place of study and home to biological collections, the centre will train researchers in related fields; is equipped with material to carry out fieldwork; and will also provide accommodation for visiting researchers and students.

More information: http://www.congobiodiv.org

Institute of Plant Biotechnology for Developing Countries (University of Gent)

The Institute contributes to sustainable socio-economic development in low and middle income countries, by enabling access to the latest technologies in plant science and by assisting in the design of effective biosafety and regulatory mechanisms.
IPBO contributes to awareness and capacity building through knowledge transfer in enabling technologies, international regulations & intellectual property rights and the promotion of innovative research oriented to the needs of developing nations.
More information: http://www.ugent.be/we/genetics/ipbo/en

Laboratory of Tropical Crop Improvement (Catholic University of Leuven, KULeuven)

Research at the Laboratory of Tropical Crop Improvement is mainly focused on the improvement of the livelihood of subsistence farmers in the tropics through sustainable agriculture. The laboratory would like to act as the link between advanced biotechnological methods developed on model plants in the north and their application for the improvement of tropical crops in the south, with a special emphasis on banana and plantain. The Laboratory wants to actively contribute to safeguarding biodiversity and produce high yielding varieties.

The Laboratory is housing the Bioversity's International Transit Centre (ITC), the world's largest in vitro collection of banana kept under the auspices of FAO. Until now, over 15,000 accessions have been supplied worldwide to 355 different locations in 100 countries. The International Transit Centre obtained in October 2003 an international status by the signing of an international agreement between Belgium and IPGRI (International Plant Genetic Resources Institute), now Bioversity International.
More information: http://www.biw.kuleuven.be/DTP/TRO/_data/overseascollaboration.htm

National Botanical Garden of Meise
Technology transfer and cooperation among botanic gardens

Being one of the 10 largest *ex situ* botanical collections in the world the National Botanic Garden of Belgium (NBGB) has a longstanding tradition of international cooperation on botanic biodiversity. The NBGB has a very broad expertise, covering all botanic groups. It deals with most branches of botany, going from molecular phylogeny and traditional taxonomy and systematics, over botanic ethnology and *in situ* and *ex situ* conservation biology to ecology and research issues linking biodiversity with themes like climate change, food security, air and water quality .
As such, the NBGB:

- receives scientists from around the world; they profit from the rich collections (living and death (herbarium of 4 million items)), the library, the databases, the NBGB-experts and their network;
- organizes workshops or symposia in Belgium or abroad on a large number of themes: botanical biodiversity, red listing (endangered species, IUCN), taxonomy, environmental education, data basing, biodiversity conservation, herbarium management, molecular phylogeny (DNA-sequencing, BAR-coding …), seed experiments, reintroduction of endangered species, …
- is involved in common research projects that mutually enrich the knowledge and knowhow of the involved partners (universities, research institutes, NGOs, …).

Its cooperation activities involve all continents. Focus is on Africa, especially Congo Basin-countries and Western Africa; but also with e.g. Kenya and Madagascar.

Some highlights:(i) institutional counselling (fusion of administration of *in situ* and *ex situ* conservation in the DR Congo); (ii) re launch of *ex situ* collections (3 botanical gardens in the DR Congo, incl. Kisantu (www.kisantu.net) and 10 herbaria in the DR Congo and Burundi (African Plant Initiative); (iii) launching the Central African Botanic Gardens Network; (iv) top research on *Rubiaceae* (incl. Coffee), *Orchidaceae* and edible mushrooms; (vi) studies linking tropical plant biodiversity with Carbon-cycle and C-fluxes (REDD+, greenhouse gasses); (vi) monitoring diatoms vis à vis water quality, fish productivity or cholera.
More information on the cooperation with Africa (in French):
http://www.botanicgarden.be/PUBLIC/GENERAL/EVENTS/EVENTSFR/Le%20Jardin%20botanique%20et%20l%20Afrique.pdf

2.3. Master courses and scholarships related to TT and biodiversity

The Belgian Universities and the Belgian Technical Cooperation offer a wide range of different scholarships for people from developing countries. There are scholarships for Master courses, short term assignments as well as doctorate studies. Scholarships are not specifically towards Technology Transfer and Cooperation for biodiversity; however students can orientate themselves to relevant studies. The scholarships are available from:

- **VLIR-UOS: Flemish University Development Cooperation:**
  VLIR-UOS awards scholarships to students from developing countries so that they can follow a master or training programme in Flanders, Belgium. For 2011, VLIR-UOS awards 180 scholarships to first-year master students and 70 scholarships to training participants. Information is on all the scholarships is available at http://www.scholarships.vliruos.be/

- **CIUF-CUD: Francophone Inter University Development Cooperation**
  CIUF-CUD awards scholarships to students from developing countries so that they can follow a master or training programme at Francophone Universities in Belgium. CIUF-CUD awards 150 scholarships to students and 70 scholarships to training participants. Information is on all the scholarships is available at http://www.cud.be/content/view/333/202/lang,/

The different scholarships that are offered through the CIUF-CUD and VLIR-UOS programmes and that have a relevancy to biodiversity are regrouped below.

International training programme 2011 'Beekeeping for Poverty Alleviation'.
Laboratory for Zoo-physiology, University of Gent (VLIR-UOS)

This four-month intensive training course addresses all aspects involved in developing beekeeping into a powerful factor of rural development. Students learn the crucial tricks of the art of beekeeping and the production of high quality bee products. They are also taught how to diversify market products, approach the local population and engage them in beekeeping. Other topics include ensuring the provision of sufficient sources of nectar and pollen; linking beekeeping with farming and nature conservation; good contacts with policymakers and authorities; and channels for attracting finance. An interdisciplinary attitude is a key feature of the programme. These scholarships cover all related expenses.
More information: http://www.zoofysiologie.ugent.be/itp.htm

International training programme 2011 'Technology for Integrated Water Management'
University of Antwerp (VLIR-UOS)

Technology for Integrated Water Management' focuses on understanding the water system and on applying technology to enhance integrated water management and –policy. The programme aims to improve the understanding of concepts and systems and enhances knowledge regarding tools and technologies. This will enable innovative planning and action from a new perspective and approach.

This programme is composed of 3 parts:

- The first part is focusing on the current state of knowledge regarding global water problems, integrated water management and integrated risk assessment.
- The second part focuses on technologies for industrial and ecological water usage.
- The third part offers an integration of all gained knowledge and confronts the student with several modelling aspects in a river basin management framework. The integrated approach demonstrates the interdependencies between the different subsystems which allow the student to think in river basin scale including all its aspects.

More information: http://www.watertechnology.be/

Master of Water Resources Engineering
Catholic University of Leuven (CIUF-CUD)

The Master programme of Water Resources Engineering is a two-year study programme with a total study load of 120 ECTS, equally spread over the 2 years. The first year consists of courses in Advanced Mathematics for Water Engineering, Statistics for Water Engineering, Irrigation Agronomy, Aquatic Ecology, Hydraulics, Surface Hydrology, Groundwater Hydrology, and water Quality Assessment, Monitoring and Treatment; and workshops in Hydrological Data Processing and GIS, and Hydrological Measurements and Remote Sensing. The second year of the Master programme has a total study load of 60 ECTS credits and consists of a common core of 2 courses (Systems Approach to Water Management, and Social, Political, Institutional, Economic and Environmental Aspects of Water Resources), an integrated project design (arid or humid case) and a Master thesis. In addition, the student selects three optional courses from the following list: Surface Water Modelling, Groundwater Modelling, River Modelling, Urban Hydrology and Hydraulics, Soil Water Modelling, Irrigation Design and Management, Advanced Aquatic Ecology, and any course relevant to water resources engineering, subject to approval by the Programme Committee. More information: http://www.iupware.be/

Master of Marine and Lacustrine Science and Management (Oceans & Lakes)
University of Antwerp, University of Brussels and University of Gent, (VLIR-UOS)

The 2-year master programme in "Master of Marine and Lacustrine Science and Management" (Oceans & Lakes) addresses students with a background in Sciences. Oceans & Lakes is an inter-university programme organized by the Faculty of Sciences of Vrije Universiteit Brussel (VUB, Free University of Brussels), Universiteit Antwerpen (UA, Antwerp University) and Universiteit Gent (UGent, Ghent University). It provides them with strong fundamental and applied knowledge and prepares them for an active role in the scientific research and management of marine and lacustrine systems. The programme adopts a multidisciplinary approach integrating physical, chemical geological, ecological and societal aspects and including nature conservation and sustainable development. More information: http://www.oceansandlakes.be/index.asp

Master of Aquaculture
University of Gent (VLIR-UOS)

This programme provides courses at university level on the most important aspects of aquaculture, for both marine and freshwater organisms. The programme takes a multidisciplinary, interuniversity and international approach, and aims at the acquisition of fundamental knowledge and skills with the main objectives being:

1. to deliver researchers able to design and perform research in various aquaculture fields;
2. to deliver experts who can draw and implement strategies for future development in the aquaculture industry;
3. to form key persons who can act as a nucleus in their local environment through dissemination of their acquired knowledge;
4. to deliver academically trained staff for the aquaculture industry.

The learning outcomes and competencies will differ from student to student as each one will follow his/her own customized program, with a solid foundation in the basic principles of aquatic production. More information: http://www.mscaquaculture.ugent.be/index.asp

Master complémentaire en aquaculture
Université de Liège and Les Facultés Universitaires Notre-Dame de la Paix (CIUF-CUD)

L'aquaculture - culture des organismes aquatiques animaux et végétaux - est un secteur en plein essor au niveau mondial. La production annuelle de poissons, crustacés, mollusques et algues par l'aquaculture a largement dépassé les 50 millions de tonnes au début du 21ème siècle, et une croissance annuelle moyenne d'environ 10% par an est attendue. En raison de la raréfaction des stocks sauvages et la mise en place de quotas de pêche à l'échelle internationale (dont les captures plafonnent à 90 millions de tonnes), l'aquaculture se développera davantage et progressivement suppléera l'exploitation par la pêche des poissons et autres organismes aquatiques. A l'heure actuelle, 50% des poissons consommés sont issus de l'aquaculture.
Ce cours vise précisément à contribuer à la formation d'étudiants dans le domaine de l'aquaculture et de la gestion des ressources aquatiques vivantes. Eu égard au public cible essentiellement constitué de ressortissants des pays en développement (P.E.D.), l'accent sera mis, au cours de cette formation, sur les espèces de poissons et de crustacés d'intérêt économique local ou mondial, et sur les techniques d'élevage appropriées aux P.E.D.
More information : http://www.cud.be/content/view/433/203/lang,/

Master of Molecular Biology (IPMB)
Vrije Universiteit Brussels - VUB (VLIR-UOS)

This Master programme aims at strengthening and updating the theoretical and practical skills of young scientists from developing countries who are already involved in either human or animal health care, or agricultural research. After two years of study, participants should have acquired the ability to cope with a wide range of scientific problems and challenges and the intellectual tools needed to develop a molecular biological approach to tackle the problems their country is facing. The first year of this Master programme consists of the following units that must be followed by all participants: Molecular Biology; Nucleic Acid Chemistry and Genetic Engineering, General Chemistry and Protein Chemistry, General and Analytical Biochemistry; Microbial Genetics and Genetics of Higher Eukaryotes; Mathematics and Statistics; Bioinformatics; Immunology; Microbiology; Virology and Parasitology; Physiology (plant or animal physiology option); practical courses and visits. The academic year consists of two semesters and

exams are organised at the end of each semester. Although there are some lectures in the second semester, students spend most of their time in research laboratories where they are acquainted with basic and advanced laboratory practice. Visits to various labs of Flemish universities and research institutes are also organised in the second semester. These visits are intended to inform the participants about the research that is being conducted in Flanders in Molecular Biology and Biotechnology, and to allow them to identify a topic for a dissertation in the second year of the programme.
In the second year the participants first follow common core courses (Advanced and Applied Molecular Biology; Advanced Microbial Genetics and Virology; Physical Chemistry and Structural Analysis of Macromolecules; Social and Economical Aspects of Biotechnology) and one of three specialisation core courses: (i) Plant Production (Phytopathology; Bio-Control of Plant Diseases and Biofertilisation; Plant Biodiversity); (ii) Animal Production (Prophylaxis of Infectious Diseases of Farm Animals; Applied Biotechnology in Livestock Production; Livestock Genetics); (iii)Human health (Human infectious diseases; Epidemiology: study design and analysis; Human Genetics and Diseases). Furthermore, students prepare a dissertation which is a very important part of the programme; half of the study credits of the second year are allocated to it. The master dissertation consists of an original research work that is to be submitted in writing and defended before a jury and an audience. Preferentially, participants should choose a topic that is relevant to the further development of their research activities in their home country.
More information:
http://www.scholarships.vliruos.be/index.php?navid=479&actionchoice=detailscholarship&scholarship_id=20&returnlink=1

Master en ressources phytogénétiques et biotechnologie appliqué
Commission Universitaire au Développement CUD et Universidad Mayor San Simon, Cochabamba, Bolivia (UMSS) (CUD/CIUF)

Cette formation de deux années est organisée à la UMSS grâce au soutien financier et à la coordination de la CUI (Coopération Universitaire Institutionnelle) dans le cadre d'un programme avec la UMSS. Cette Maîtrise s'inscrit dans l'axe de la biodiversité andine et a comme objectif d'approfondir et de réactualiser les connaissances et les compétences d'étudiants et de professionnels de Bolivie dans le domaine de la gestion, la caractérisation, l'évaluation et la conservation in situ et ex situ des ressources génétiques végétales. Les aspects biologie, génétique, amélioration variétale, écologie, biotechnologies appliquées, économie rurale, anthropologie du développement, éthique, biosécurité, etc. sont abordés par des encadrants de Bolivie, d'Amérique latine et de Belgique (CIUF). La formation se termine par un travail de fin d'études qui doit obligatoirement être lié avec l'une ou l'autre composante de la préservation et valorisation des ressources génétiques végétales.
La Maîtrise est organisée conjointement par deux responsables d'activité : un de la UMSS et un de la CIUF.

Master of Nematology
University of Gent (VLIR-UOS)

The programme curriculum is characterised by a multidisciplinary, interuniversity and international approach reflecting the high diversity, complexity and biological specialisation of nematodes.
The objective is to provide the participants with a thorough basis, practical skills and updated knowledge in all aspects of plant and insect parasitic nematodes, as well as free-living aquatic and soil nematodes (human and vertebrate parasites which belong to the disciplines of medical doctors and veterinarians are not dealt with). The Master course includes training and research. Emphasis is put on the acquisition

of microscopy techniques and accurate identification skills aided by the availability of a virtually complete taxonomic library, crop protection, biocontrol, use of nematodes as bio-indicators for quality assessment of terrestrial soils and aquatic sediments, latest techniques for control of nematode pests, such as genetic manipulation. The study programme lasts two years: the first year consists of several courses and practical exercises, the second consists of a few additional courses, networking and seminars, and the dissertation. The programme offers compulsory courses, three elective modules (Nematology Applied to Agro-ecosystems, Nematology Applied to Natural Ecosystems, Nematode Systematics (Taxonomy, Phylogeny and Biodiversity) and additional elective courses.
More information: http://www.pinc.ugent.be/index.asp

Stage en Système d'Information Géographique (SIG)
Université Libre de Bruxelles (CIUF-CUD)

Compréhension et maîtrise des systèmes d'information géographique, sur base de logiciels libres et l'exploitation de sources de données gratuites ou peu onéreuses. Durant la formation les stagiaires peuvent aborder des questions de biodiversité dans le projet personnel qu'ils doivent réaliser pendant le stage, notamment par la mise en place de SIG pour la gestion d'espaces naturels protégés.
More information : http://www.cud.be/content/view/444/203/lang,/

Stage méthodologique en appui à l'innovation en agriculture familial
Université de Liège - Gembloux Agro-Bio Tech (CIUF-CUD)

Le stage vise à fournir des outils méthodologiques, des connaissances et des éléments de réflexion pour appuyer l'identification, le développement et la diffusion d'innovations techniques et institutionnelles visant à améliorer durablement le fonctionnement de l'agriculture familiale des pays en développement.
More information : http://www.cud.be/content/view/446/203/lang,/

Stage en environnement et gestion durable des ressources minerals
Université de Liège (CIUF-CUD)

L'objectif de ce stage de formation est d'offrir aux différents acteurs des industries minérale, minière et métallurgique des pays en développement les bases scientifiques et techniques permettant l'évaluation, la gestion et l'atténuation des impacts environnementaux de ces industries ainsi qu'une gestion durable de leurs ressources minérales.
More information : http://www.cud.be/content/view/447/203/lang,/

Master complémentaire en sciences et gestion de l'environnement dans les pays en développement
Académie universitaire "Wallonie Europe" (CIUF-CUD)

Ce master complémentaire consiste en une formation pratique, interdisciplinaire et implique une intégration des savoirs. Il s'agit de fournir des éléments de compréhension sur la dynamique de fonctionnement des systèmes naturels et sur les interactions entre l'homme et son milieu à travers la gestion des ressources dans un contexte de développement durable. Au terme de la formation, l'étudiant aura acquis les connaissances et les capacités afin de caractériser et de diagnostiquer l'état de l'environnement et de pouvoir définir et de mettre en application des stratégies d'organisation par un apprentissage d'outils d'interventions techniques et de gestion.
More information : http://www.cud.be/content/view/436/203/lang,/

Master complémentaire en gestion des ressources animales et végétales en milieux tropicaux
Académie universitaire "Wallonie Europe" (CIUF-CUD)

Cette formation d'une année est organisée conjointement par Gembloux Agro Bio Tech et les Facultés de Médecine vétérinaire de l'Université de Liège
La formation a pour objectif principal d'améliorer les capacités de gestion des ressources naturelles des milieux tropicaux, soit à des fins agricoles, via l'amélioration durable des performances des systèmes de culture et des systèmes d'élevage, soit en vue de préserver et de valoriser les ressources génétiques et la faune sauvage et son environnement.
La formation vise à répondre de manière durable aux problèmes qui se posent dans de nombreux pays en développement en matière d'insécurité alimentaire, de malnutrition, de développement périurbain, de pauvreté rurale et de dégradation de l'environnement, en contribuant notamment à la conservation de la biodiversité animale et végétale.
Arriver à produire de manière durable (au point de vue environnemental, social et économique) les denrées agricoles nécessaires à l'alimentation et au développement des pays du Sud tout en préservant leurs ressources naturelles et en développant des opportunités de revenus grâce à la mise en place et à la gestion des ressources génétiques et naturelles ainsi que des réserves de faune sauvage est indéniablement une priorité pour l'immense majorité des pays en développement.
More information : http://www.cud.be/content/view/437/203/lang,/

Master complémentaire en gestion des risques naturels
Académie universitaire "Wallonie Europe" (CIUF-CUD)

Le cours vise à former des responsables capables de participer, à tous les niveaux de la prise de décision, à une meilleure intégration de la gestion des risques naturels dans les stratégies et projets de développement. Les risques naturels pris en considération sont les géo- et climato-risques. Les effets d'amplification que les activités humaines peuvent exercer sur ces risques seront également étudiés.
La formation vise plus particulièrement :

- à donner aux participants une capacité d'approche globale et systémique de la problématique de la gestion des risques naturels ;
- à identifier et étudier les processus naturels générateurs de risques, leurs impacts, les risques y afférents ;
- à former les participants aux méthodes d'analyse des risques: collecte et traitement de l'information, modélisation, analyse économique, analyse du domaine d'acceptabilité, analyse multicritères, ... ;
- à former les participants aux méthodes de gestion des risques: mitigation, prévention, limitation des impacts, gestion des situations de crise ;
- à permettre aux participants d'acquérir les compétences nécessaires pour opérationnaliser les connaissances acquises en favorisant l'approche par études de cas et résolution de problèmes.

More information : http://www.cud.be/content/view/438/203/lang,/

Master complémentaire en protection des cultures tropicales et subtropicales
l'Université de Liège - Gembloux Agro-Bio Tech et Université catholique de Louvain (CIUF-CUD)

Ce cours vise à former et perfectionner des professionnels travaillant, en particulier dans les pays tropicaux, dans le domaine de la protection des cultures.

Le niveau de la formation assuré par ce master complémentaire doit permettre aux diplômés d'exercer avec compétence des responsabilités importantes dans les secteurs professionnels et dans les organes de décision en rapport avec la protection des végétaux. More information : http://www.cud.be/content/view/449/203/lang,/

2.4. Hard Technologies

There are some examples of Belgian cooperation projects that give and train people in hard technologies as mentioned in the earlier chapters. These technologies can be characterised in the following categories:

1. Computers and Internet access for information networks
2. Equipment for inventories and collection of species, for the maintenance of collections or laboratory research (e.g. Scanning Electron Microscopy)
3. Equipment related to GIS applications: GPS, digitalization equipment, tracking equipment
4. Equipment in relation to biotechnology and biotechnology research.
5. Equipment to conserve food or use less wood for cooking: improved food stoves, smoking ovens, solar drying equipment.

This type of cooperation is integrated in projects on institutional or individual capacity building. They always come with capacity building programmes that can last several years.

There are some examples available of transfer of hard technologies that are more or less indirectly related to biodiversity, such as installation of sewage treatment plants (improvement of water quality), cultivation and commercialisation of local mushrooms varieties (direct effect on utilization of wild biodiversity), technologies to reduce post-harvest losses for tropical timbers, improved fishing and fish processing technologies, technologies for alternative sources of energy and more. However their effect on local biodiversity is not the main purpose of the transfer and therefore not taken in to account in this note.

3. Pertinent seminars and symposia

There have been several symposia and seminars during the reporting phase that might have touched to a small extent Technology Transfer during presentations and discussions. However there has not been any symposium or seminar that specifically focused on technology transfer related to biodiversity towards developing countries.

4. Information dissemination

A special section on technology transfer and cooperation is under development on the Belgian Clearing House mechanism. It will regroup information from the national reports, the replies to the notifications as well as actual technology transfer activities. The different sites mentioned under point 2 will also give more information on upcoming opportunities.

5. Other implementation activities

There are several consortia between Belgian institutions and universities and partners in developing countries. These can be categorised under:

- Inter-university consortia: to build capacity of universities in developing countries. This is done through transfer of technology and related training, visiting professors, scholarships and more.
- Inter-institutions consortia: building capacity of institutions in developing countries through training, collection missions, transfer of technologies and more. The Congo Biodiversity Initiative, the collaboration between RBINS and Institut Congolais pour la Conservation de la Nature from Congo on the management of the national parks, RBINS and INECN Burundi for the inventories and monitoring tools for national parks are some examples.
- Global consortia: Belgian institutions and universities are also members of several consortia that aim at capacity building. Part of the capacity building includes the transfer of technologies. For example Belgium is a member of the Consortium of Scientific Partners to the Convention, the Central African Botanic Gardens Network and the African Plant Initiative.

6. Conclusions

The preparation of this note provided an opportunity to get a better overview of different types of transfer of technologies undertaken by Belgium. It also shows that there is an overlap of the issue of technology transfer with the other areas of the Convention (like Technical and Scientific Cooperation, the Global Taxonomy Initiative and others).

The note reveals that the following areas related to technologies and biodiversity do not receive much attention by Belgium: (*1) Support for technology needs assessments and regulations, including capacity-building for technology assessments; (3) Pertinent seminars and symposia; and (4) Information dissemination.* However cooperation activities that do not have the label technology transfer do implement some form of technology transfer in parts of their programme.

Finally, technologies transferred by the Belgian cooperation with an indirect impact on biodiversity are not covered by this note (see under 2.4; e.g. sewage installations, alternative sources of energy). Nowadays, programmes and projects funded in partner countries do not systematically follow an ex ante environmental assessment procedure although it is an objective of the Belgium's national biodiversity strategy since 2006[*]. When an impact assessment is carried out prior to the introduction of these technologies in developing countries, biodiversity is not necessarily included in the criteria for assessment. One of the challenges for the coming years will be to get an overview of these technologies and their impact on biodiversity.

[*] Belgium's national biodiversity strategy 2006-2016, Operational objective 11.2 "All programmes and projects funded in partner countries have an ex ante environmental assessment procedure, ranging, as appropriate, from environmental screening to full environmental impact assessment or strategic environmental assessment".