Thematic Report on Transfer of Technology and Technology Cooperation

Please provide the following details on the origin of this report.

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Please provide summary information on the process by which this report has been prepared, including information on the types of stakeholders who have been actively involved in its preparation and on material which was used as a basis for the report.

- Ministry of Environment and Physical Planning (MEPP) - Agency of Environment is competent authority for CBD implementation in the country.

The Department of Biological Diversity (DBD) in the Agency of Environment prepared technical part of this report.

- Faculty of Agriculture

- Department of Genetics and Plant Breeding
- Institute for Agriculture
- Department of Animal Science
- Institute for Animal Science

- Faculty of Forestry
- Faculty of Natural Sciences and Mathematics

Transfer of Technology and Technology Cooperation

Inventory and assessment

1. Has your country developed an inventory of existing technologies or category of technologies, including from indigenous and local communities, for the conservation and sustainable use of biological diversity and its components, in all the thematic areas and cross-cutting issues addressed by the Convention?	
a) no	x
b) an inventory under development	
c) an inventory of some technologies available (please provide some details)	
d) yes, a comprehensive inventory available (please provide details)	
2. Has your country assessed the potential impacts of relevant technologies on biological diversity and their requirements for successful application?	
a) no	x
b) yes, please give some examples	
3. Has your country carried out an assessment of the needs for relevant technologies?	
a) no (please specify the reasons)	x
b) yes, and please specify the needs met and the needs not met for existing technologies and for new technologies	

Implementation of some relevant articles of the Convention, relevant decisions adopted at the previous meetings of the Conference of the Parties and recommendations of SBSTTA

4. In implementing the thematic programmes of work adopted by previous meetings of COP, has your country achieved the outcomes identified in these programmes of work through technology transfer and technology cooperation? (Decisions II/10, III/11, IV/6, IV/7 and V/4)	
a) no	x
b) yes, but only a few activities in some programmes	
c) yes, and a wide range of activities in many programmes of work	
d) if yes, please specify these activities and programmes of work	
5. Has your country undertaken technology cooperation with other Contracting Parties that lack the expertise and resources to assess the risks and minimize the negative impacts of introducing alien species? (Decision V/8)	
a) no	x
b) yes – please give details below (including types of technology transferred, actors involved, terms for transfer and means of access to technology)	

6. Has your country taken any steps or measures to facilitate transfer of technology to and technology cooperation with other Parties to develop and/or strengthen their capacity to implement the policy, program and practice for sustainable use of biological diversity? (Decision V/24)	
a) no	x
b) yes, please specify detailed measures and steps	
7. Could you provide examples or illustrations of benefit-sharing contractual agreements which have included technology cooperation and technology transfer as benefits to be shared? (Article 15)	
a) no	x
b) yes	
8. Has your Government taken measures, as appropriate, to ensure, as set out in the Article 16(3) that Contracting Parties providing genetic resources are provided access to and transfer of technology which makes use of those genetic resources? (Article 16)	
a) no	x
b) yes, please provide some details	
9. Have the taxonomic institutions in your country taken any initiatives in developing national priorities, both individually and regionally, in new technology? (Decision IV/1)	
a) no	
b) yes, in early stages of development	x
c) yes, in advanced stages of development	
d) yes, some initiatives in place and some priorities identified	
e) yes, comprehensive priorities identified	
10. Has your country been involved in technology development and/or transfer for the maintenance and utilization of ex situ collections? (Decision V/26)	
a) no	x
b) yes – please give details below (including types of technology transferred, actors involved, terms for transfer and means of access to technology)	
11. Has the clearing-house mechanism in your country been further developed in order to assist in obtaining access to information concerning access to and transfer of technologies? (Decision V/14)	
a) no	x
b) yes, please provide some examples	

Role of public and private sectors in technology transfer and technology

12. Do you know of any examples of technology partnerships between public R&D institutions from developing countries and private-sector firms from industrialized countries? If so, to what extent have these partnerships involved	
a) the training of developing country scientists in the application of new technologies for the conservation and utilization of genetic resources	Yes, organization of Basic Training Course- Application of Molecular Methods in Selection and Conservation of Domesic Animals/ Exchanging of information between IPGRI,FAO and other instititions
b) information exchange on new scientific exchange and technological advances	Yes there is information exchange of knowledge and new technologies between different institutions.
c) providing various technology components to developing country partner institutions	No
d) engaging in joint R&D?	No

13. Has your country taken any measures or developed any programmes to encourage the private sector or the public-private partnership to develop and transfer technologies for the benefit of governments and institutions of developing countries, including South-South cooperation?	
a) no	x
b) yes, please give details	
14. Have any type of incentives been established in your country to encourage the participation of the private sector in conservation and sustainable use activities as sources of new technologies and potential financers of conservation programmes?	
a) no	x
b) yes, please give details	

Impact of intellectual property rights on technology transfer and technology cooperation

15. Are the technologies your country has accessed or wishes to access in the public domain or covered by intellectual property rights?	
a) public domain	
b) intellectual property rights	
c) both	x
16. Have intellectual property rights been a limiting factor in acquiring technologies for the conservation and sustainable use of biological diversity?	
a) no	x
b) yes, please provide an example and specify the following: the type of technology sought (hard or soft technology); the area to which it is to be applied (e.g. forest, marine, inland waters, agriculture, etc.)	

Capacity-building for technology transfer and technology cooperation

17. Have adequate institutional structures been established and/or is adequate human capacity available to access relevant technologies, in your country?	
a) no	x
b) yes	
18. What, if any, have been the limiting factors in implementing relevant technologies?	
a) institutional capacity	
b) human capacity	
c) others - please specify	Generally we do have basic equipment, but we have need for other (more sophisticated) instruments and equipment, and providing possibilities (visiting of courses and workshops) for improving of our personnel.
19. Does your country consider that access to information and training or lack thereof has been a limiting factor in access to and transfer of technology?	
a) no	
b) yes, please provide some examples	Training of special officers from government's institutions in the area of Genetic Resources and transfer of knowledge and financial support to researcher and scientific institutions
20. Has your country been able to identify relevant technologies in specific areas for the conservation and sustainable use of biological diversity in your country?	
a) no	
b) yes, please give details	Yes, some researchers are very familiar to the new technologies, *in situ* and *ex situ* methods of conservations
21. Has your country developed national policy and established international and national institutions to promote technology cooperation, including through the development and strengthening of technical, human and institutional capabilities?	
a) no (please specify the reasons)	No, there is lack of link between government institutions and scientific institutions,
b) yes, please give some details or examples	

22. Has your country established joint research programmes and joint ventures for the development of technologies relevant to the objectives of the Convention?	
a) no	No, on the national level that kind of programs are not established, but there is a research activities between Agricultural faculty from ex Yugoslavia for estimation of genetic diversity and genetic distances between strains of pramenka breed
b) yes, please give some details or examples	

Measures for facilitating access to and transfer of technology

23. Has your country established the mechanisms and/or measures to encourage and facilitate the transfer of technology to and technology cooperation with other Contracting Parties?	
a) no	x
b) yes, please provide some details	
24. Has your country established channels for access to the technologies developed and applied for attaining the objectives of the Convention?	
a) no	x
b) yes, please provide detailed information	

Success stories of and constraints to technology transfer and technology cooperation

25. Has your country identified any success stories and opportunities of and constraints to transfer of technology and technology cooperation?	
a) no	x
b) yes, please provide detailed information	

Further comments

Answers 12b. section are generally for the Animal Genetic Resources and Plant Genetics.
Answer 22 , Department of Animal Science

Researchers from Faculty of Agriculture- Department of Animal Science and Institute for Animal Science, are the leading group in the field of Characterization and Conservation of the Animal Genetic Resources of domesticated animals and effort are made for enlarge research activities in the wild species which are specific for our country.

In the past years morphometry characterization is done almost for all domesticated species in our country, including the Macedonian shepherd dog – sharplaninec.

Specialized research group is working on the ongoing research activities for implementation of *in situ*, *ex situ* conservation of domestic animals and use of new technologies in the storage, characterization and conservation of the Animal Genetic Resources.

The laboratory for biochemistry and molecular biology is prepared for application of new technologies in the field of conservation and characterization of Animal Genetic Resources, on going research activities in the different species are:

- Biochemical polymorphisms on blood groups,
- Biochemical polymorphisms on hemoglobin,
- Biochemical polymorphisms on milk proteins,
- Use of different molecular markers (RFLPs, PCR RFLPs, Microsatellites) in characterization and conservation of Animal Genetic Resources.

Faculty of Agriculture- Department of Animal Science and Institute for Animal Science are prepared to answer on the all tasks for conservation and characterization of the Animal Genetic Resources, but there is insufficient support from government institution in the field of financial support and transfer of information's. And the biggest problem is lack of equipment for different kind of analysis, and financial support for promotion of the issues involved in Animal Genetic Resources (AGR), which involves increasing the public awareness about AGR by spreading information and knowledge; promoting its teaching in schools and universities and arranging courses on AGR for people involved in agriculture and research, documentation of existing genetic resources, which includes the description of the population sizes and phenotypic characteristics of breeds; documentation of their economic performance, of any special traits they may have, of their cultural/historical importance, as well as of their genetic uniqueness, establishment support of breed conservation programs directed toward specific breeds, which could include *in situ* or *ex situ* program's for endangered breeds; supporting farmers willing to use breeds of lower productivity in today's economic situation or supporting genetic improvement program's and managing inbreeding for breeds not currently endangered but which may become so in the near future.

Improve is made with new teaching programme at the Faculty of Agriculture-

Department of Animal Science, including Biodiversity as the exam during the studies.

Researchers from Faculty of Forestry- Department of Forest Genetics and Tree Improvement, are the leading group in the field of Identification and Conservation of Forest Genetic Resources.
Currently the ongoing research activities are focused on the investigation of genetic variability, implementation of *in situ* and *ex situ* conservation of the economically most important forest trees and use of new technologies in the identification and conservation of the Forest Genetic Resources.
The researchers at the Department of Forest Genetics and Tree Improvement are trained for the application of new technologies in the field of conservation and identification of Forest Genetic Resources. So far the research was carried out on the investigation of genetic variability of coniferous tree species by use of biochemical (isozymes) and molecular markers (SSR - Microsatellites).
The biggest obstacle the researchers from this department are facing is lack of sophisticated equipment and lack of financial resources for continuous research activities and promotion on forest genetic resources.

The lieder institutions dealing with plant conservation are Institute of Agriculture (IA) together and Faculty of Agriculture (FA).

The Faculty of Agriculture (Department of Genetics and Plant Breeding) in general could implement the following techniques:

- *ex-situ* and *in-situ* conzervation
- storing of plant material
- characterization
- evaluation
- DNA analysis for determination of duplicates and relation between accessions
- *In vitro* storing
- criogenization

For some of the above-mentioned techniques they need equipment and reconstruction of the existing rooms and laboratories.

It is a great importance to organize conservation of domestic varieties and populations, also and wield species, due to the world trends for conservation of the Biological diversity.

Above all, the person in charge is needed in the Government who will be responsible for plant conservation with national strategy, and funding for implementation.

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