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CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY SERVING AS THE MEETING OF THE PARTIES TO THE CARTAGENA PROTOCOL ON BIOSAFETY
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Item 6 of the provisional agenda *

REPORT ON THE NEEDS AND PRIORITIES OF COUNTRIES FOR THE IMPLEMENTATION OF THE PROTOCOL AND POSSIBLE MEASURES FOR ADDRESSING THEM, INCLUDING OPTIONS FOR ENHANCING THE EFFECTIVENESS AND ADEQUACY OF FINANCIAL ASSISTANCE

Note by the Executive Secretary

I. INTRODUCTION

1. In its decision BS-1/5 on capacity-building, the Conference of the Parties serving as the meeting of Parties to the Cartagena Protocol on Biosafety emphasized the need to ensure that capacity-building initiatives are demand-driven and responsive to the needs and priorities of countries. It also noted that assessment of capacity-building needs and gaps is important in helping to determine appropriate intervention measures. In this regard, Parties and other Governments were invited to submit their capacity-building needs and priorities to the Biosafety Clearing-House as soon as possible and to review their needs periodically and update their records accordingly. On the other hand, Governments and relevant organizations in a position to provide assistance were invited to review the information submitted to the Biosafety Clearing-House when developing assistance programmes.

2. In the same decision, the Executive Secretary was requested to compile, on the basis of the information submitted to the Biosafety Clearing-House, a summary report on the capacity needs and priorities for consideration at the regular meetings of the Conference of the Parties serving as the meeting of Parties to the Protocol and also make it available to donor Governments and relevant organizations, as appropriate.

* UNEP/CBD/BS/COP-MOP/2/1.

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3. This note presents the report on the capacity-building priority needs for the implementation of the Protocol based on submissions by countries to the Biosafety Clearing-House. It also provides a general overview of the coverage of existing capacity-building initiatives in contributing to the implementation of the Action Plan for Building Capacities for the Effective Implementation of the Protocol, which was adopted in decision BS-I/5, and identifies the major gaps in its implementation. That analysis of needs and gaps is meant to assist the Conference of the Parties serving as the meeting of Parties to the Protocol, the governments and relevant organizations in identifying strategic measures to address the capacity needs to facilitate the effective implementation of the Protocol

4. Section 3 of the note discusses possible strategies and measures that Governments, relevant organizations and donors may consider taking to address the priority needs and gaps, including ways and means of enhancing the adequacy and effectiveness of financial resources for implementation of the Protocol. Section 3, paragraph 4 (e) of the capacity-building Action Plan calls for enhancing the effectiveness and adequacy of financial resources provided by multi-lateral and bilateral donors and others donors to developing countries as well as countries with economies in transition.

II. REPORT ON THE BIOSAFETY CAPACITY-BUILDING NEEDS AND PRIORITIES OF DEVELOPING COUNTRIES AND COUNTRIES WITH ECONOMIES IN TRANSITION

5. Following the adoption of the Cartagena Protocol on Biosafety in 2000, a number of countries embarked on the process of assessing their capacity-building needs for its implementation and made submissions to the Biosafety Clearing-House. With the support of different organizations, some countries have undertaken formal needs assessments/ surveys and documented their needs in various reports and publications. 1/

6. In accordance with paragraph 16 of decision BS-I/5, this section contains a draft summary report on the biosafety capacity-building needs of countries based on the information registered in the Biosafety Clearing-House. 2/ It focuses on the capacity needs common to countries in Africa, Asia-Pacific, Latin America and the Caribbean, and Central and Eastern Europe. The report is organized along the elements of the Action Plan in the order of priority based on the number of country responses.

7. The report also incorporates information obtained from relevant documents, including National Biosafety Frameworks and reports of needs assessment surveys, national/ regional consultative workshops and other key processes that were undertaken after the adoption of the Protocol including the following:

(a) The UNEP-GEF project on development of national biosafety frameworks, which included a component on national surveys to determine the status of biotechnology applications and use, existing instruments, available bilateral/multilateral support for biosafety and the needs and gaps;

1/ Different organizations including UNEP/GEF, FAO and IUCN have assisted countries to undertake surveys and organize consultative meetings focusing on the analysis of biosafety capacity needs and priorities.

2/ Submissions by each country are registered in the country capacity needs database in the Biosafety Clearing-House, which can be accessed at: http://bch.biodiv.org/Pilot/CapacityBuilding/SearchCapacityNeeds.aspx

(b) The Country Capacity Development Needs and Priorities Assessment reports produced under the UNDP-GEF Capacity Development Initiative; 3/

(c) A survey carried out for the FAO in 2003 on the current situation of biotechnology and biosafety issues in countries of the Balkans and the Caucasus; 4/

(d) FAO regional consultative meeting on capacity-building in biosafety of GM crops in Asia held 7-10 July 2003 in Bangkok, Thailand; 5/

(e) A workshop on "Capacity Development for the Integrated Approaches to Biosafety of Genetically Modified Organisms (GMOs): Southeast Asia Workshop"; from 6-8 November 2001; Jakarta, Indonesia; organized by the United Nations University; 6/

(f) Country reports prepared for IUCN on the status of biosafety, including capacity-building needs, in nine Asian countries namely: Bangladesh, Bhutan, Cambodia, China, Lao PDR, Malaysia, Philippines and Viet Nam; 7/

(g) Stakeholder Consultation Workshop on the Biosciences Facility for Eastern and Central Africa held 28-30 January 2004 in Nairobi, Kenya; and the Workshop on Biosafety Capacity Needs of Africa organized in 2003 in Nairobi, Kenya by the Meridian Institute; 8/ and

(h) The capacity-building workshop on biosafety for the Caribbean; 19-30 January 2004; Port of Spain, Trinidad. 9/

8. In May 2003, the Executive Secretary developed and sent to all countries a questionnaire (common format), structured along the lines of the capacity-building Action Plan, to assist them in identifying and submitting information regarding their needs and priorities. The questionnaire was incorporated in the management centre of the Biosafety Clearing-House to enable countries to register the information directly online. 10/ The common format was intended to facilitate submission of information in a simple and consistent manner on one hand and easy searching and analysis of the information in the capacity needs database on the other. It included a predetermined list of specific needs (controlled vocabulary), which was prepared on the basis of the results of previous biosafety capacity needs assessments and input from experts and countries were asked to select those that applied to them. Free text entry fields were also included in the questionnaire for countries to fill-in other needs not specified. The structure of the questionnaire allowed countries to select up to three priority needs under each of the Action Plan elements and up to three choices of their desired means to address the identified needs. Countries were also requested to indicate which needs were already being addressed, or could be addressed at a national level, using locally available resources.

3/ See details at: http://www.gefweb.org/Site_Index/CDI/cdi.html

4/ A copy of the survey report is available at: ftp://ftp.fao.org/sd/SDR/SDRR/REUBIOSAFETY4-2.doc

5/ A copy of the workshop report available at: http://asiabionet.org/activities/firstRCJuly2003/Biomeeting2a12.pdf

6/ See workshop report at: http://binas.unido.org/binas/reviews/BiosafetyPolicyOptionsandCapacityBuilding.pdf

7/ Links to the country status reports available at: http://www.rbp-iucn.lk/biosafety/MainPage.htm

8/ See a copy of the workshop report at: http://www.ilri.cgiar.org/africanbiosciences/stakeholder_consults.htm

9/ See a copy of the workshop report at: http://www.niherst.gov.tt/s-and-t/ccst-biosafety-workshop-report.htm.

10/ See a copy of the questionnaire at: http://www.biodiv.org/doc/notifications/2003/ntf-2003-045-bs-en.pdf

9. As of 28 February 2005, at least 50 developing countries and countries with economies in transition had registered their capacity-building needs and priorities in the Biosafety Clearing-House. These include: Argentina, Bangladesh, Bhutan, Bulgaria, Cambodia, Cameroon, Central African Republic, Chad, China, Colombia, Costa Rica, Croatia, Cuba, Ecuador, Egypt, Estonia, Ethiopia, Ghana, Grenada, Haiti, India, Iran (Islamic Republic of), Jamaica, Kenya, Laos PDR, Latvia, Liberia, Lithuania, Mali, Malta, Mauritania, Myanmar, Namibia, Nepal, Nicaragua, Niger, Nigeria, Palau, Paraguay, Republic of Moldova, Rwanda, Slovak Republic, Slovenia, Sri Lanka, Sudan, Thailand, The former Yugoslav Republic of Macedonia, Trinidad and Tobago, Uganda and Viet Nam.

10. Almost all the countries that made submissions reported a lack of capacity in the broad areas identified in the Action Plan for Building Capacities for the Effective Implementation of the Protocol. A summary of the number and percentage of countries that expressed needs under the different broad capacity-building areas is presented in table 1 below.

11. The majority of countries (over 85%) expressed a need for capacity-building in the following areas: institutional capacity-building, human resources development and training and capability to undertake risk assessment and risk management. A large number of countries (over 80%) also highlighted the need to promote awareness, education and public participation; build capacity in identification of living modified organisms; and establish mechanisms to promote information exchange and data management, including participation in the Biosafety Clearing-House.

Table 1: Prioritized list of the broad biosafety capacity needs identified by countries

Broad Capacity-Building Needs Identified	No. of countries	Percentage
1. Institutional-building (including: regulatory capacity, administrative capacity, infrastructure, funding and mechanisms for follow-up)	47	96
2. Human resource development and training	46	94
3. Risk assessment	44	90
4. Risk management	42	86
5. Awareness, education and public participation	41	84
6. Identification of LMOs	39	80
7. Information exchange, data management and participation in the BCH	39	80
8. Technical, scientific and institutional collaboration	35	71
9. Technology transfer	33	67

12. A number of countries identified specific needs and gaps under each of the above broad categories of capacity-building elements. The following paragraphs include a synthesis of the specific needs under each of the broad capacity-building elements of the Action Plan, which were reported by most countries. An aggregated compilation of the needs expressed by various countries is presented in Annex 1.

A. Institutional capacity needs

13. A lack of institutional capacities represents the biggest limitation to the effective implementation of the Protocol for most countries. Many countries have inadequate legislative and administrative frameworks, poor infrastructure, inadequate and inconsistent funding and many have no effective mechanisms for follow-up and monitoring. These institutional limitations are discussed briefly below.

14. *Inadequate policy, legal and regulatory frameworks:* The majority of countries reported that they still lack comprehensive national policies and legal frameworks on biosafety. A few countries such as Bulgaria, China and India indicated they have already enacted biosafety legislation, but they lack the necessary implementing regulations or guidelines and the resources to enforce them. However, there are a number of ongoing initiatives that are currently assisting countries to develop or refine their regulatory frameworks. For example with funding from the Global Environment Facility, more than 140 countries have developed or are in the process of developing draft national biosafety frameworks, which include a component on establishment of national biosafety policy and legislative frameworks and training in those issues. Twelve other countries have been supported to implement their frameworks, including refinement of their biosafety policy and legal regimes, and establishment of enforcement mechanisms. In this regard, it is expected that most countries will soon have biosafety regulatory systems in place. The challenge, however, will be lack of capacities to implement and enforce them.

15. *Lack of effective administrative frameworks and capacities*: Several countries reported major gaps in the administrative frameworks for biosafety, including lack of institutional mechanisms for receiving and handling notifications or applications for import/ export of LMOs or for intentional release of LMOs into the environment. Many have not yet established administrative systems to deal with biosafety issues, including: standard operating procedures, consistent scientific and technical review and authorization mechanisms, statutory application forms as well as administrative guidelines. An analysis of the draft National Biosafety Frameworks produced under the UNEP-GEF project indicates that countries also need support to establish procedures for decision-making (including risk-benefit analysis and integration of socio-economic considerations). As well, potential applicants also require guidance to be able to prepare appropriate LMO import or release applications/ dossiers. However, with the support from some ongoing capacity-building initiatives, especially the GEF-funded projects, a number of countries are now in the process of establishing relevant institutions, biosafety committees and technical advisory groups as well as administrative systems to deal with biosafety issues.

16. *Infrastructure*: Many countries highlighted the need to establish or rehabilitate their laboratories, greenhouses and other field research facilities for biosafety, including testing and monitoring of LMOs in the field. Several others also expressed a need for office equipment, computer hardware and software, good telecommunications infrastructure and reliable Internet connectivity.

17. *Lack of funding*: Limited funding was the highest priority need reported by most countries that responded. Both the government funding and external donor assistance for biosafety activities are inadequate and unpredictable. Several countries expressed an urgent need for increased and consistent funding for biosafety activities. Some specifically requested for improved access to funding information and for training in project development skills as possible strategies for building their capacities to mobilize adequate funding for national biosafety activities.

18. *Mechanisms for follow-up and monitoring:* Many countries lack systems for 'following up' the decisions taken regarding LMOs and for enforcing the biosafety policies and regulations, risk management plans and monitoring for environmental effects of LMOs in the field.

B. Human resources development and training

19. More than 94% of the countries that submitted information to the Biosafety Clearing-House reported shortages of human resources with competencies in biosafety-related fields – scientific/technical, legal and socio-economic. Many countries specifically expressed an overall lack

of local expertise in risk assessment and risk management, regulatory procedures & enforcement skills, identification of LMOs and in information and data management, including use of the Biosafety Clearing-House. Many called for the training of local scientists, decision makers, administrative and advisory staff on legal, scientific and technical aspects of biosafety, through training workshops, study tours/ attachments and access to relevant training materials.

20. With regard to scientific and technical capacities, different countries indicated a need for training in the following specific areas: scientific methods for risk assessment and management; detection, testing and quantitative analysis of LMOs; evaluation of genetic modifications assessment of extent and effects of gene flow; and molecular biology skills (including: gene isolation, sequencing etc). With regard to the legal and socio-economic issues, several countries expressed the need to develop expertise in the following areas: policy expertise for analysis of the linkages between other international agreements and Protocol requirements; assessment of trade impacts of biosafety-related measures; cost-benefit analysis; bioethics; legal drafting and policy analysis; and assessment and integration of socio-economic considerations in decision-making.

C. Risk assessment and other scientific and technical expertise

21. Several countries (more than 80%) reported the lack of capacity in risk assessment as a major constraint. A number of specific risk assessment capacity needs were reported including the need to establish national systems (procedures and mechanisms) for risk assessment and to develop local expertise to undertake or review risk assessments. Many also expressed a need for guidance materials on risk assessment, including tested methods, protocols and standard procedures for describing and measuring the risks of LMOs and the capability to use them. A few mentioned a need for support to undertake biosafety research, for example to determine the effects of LMOs on non-target species and studies on the invasiveness of LMOs compared to their non-LMO counterparts while others, especially those that participated in the FAO survey on the current situation of biotechnology and biosafety issues on countries of the Balkans and the Caucasus, expressed a strong desire in accessing available scientific data and information on risk assessment of LMOs.

D. Risk management

22. Risk management is another key area in which many countries reported lacking capacity. Specifically, several countries indicated that they lack mechanisms and strategies for risk management (70%) and lack expertise and tools for post-release monitoring and surveillance of LMOs (63%), including methodologies for tracing and determining the stability of the transgenic traits in the field. Many also expressed a need to develop LMO inspection procedures and control measures and capability for detecting and preventing unintentional release of LMOs into the environment, including emergency measures for dealing with such cases, as well as protocols to address issues of gene flow.

E. Awareness, education and public participation

23. Capacity-building for promoting awareness, education and participation of different stakeholders, including policy-makers, the public and others regarding LMOs was another critical needs expressed by several countries (84%). In particular, a number of countries highlighted the need for support to organize and implement awareness programs (e.g. seminars, radio/TV programmes, etc), access to biosafety awareness materials and communication networks; and skills, methods and systems for promoting public participation in decision-making. A few countries also specifically indicated a need for assistance to establish mechanisms to ensure easy public access to

information on LMOs in comprehensible formats while others expressed a need for training in effective outreach skills including engagement of the mass media.

F. Information exchange and data management, including participation in the BCH

24. Several countries (80%) reported the need for improved information exchange and data management systems, including effective participation in the Biosafety Clearing-House. Many specifically expressed a need for appropriate equipment, both hardware and software and training in their use, in order to establish and maintain national nodes of the Biosafety Clearing-House, websites and/or national databases while others noted the need to develop electronic inter-linkages among the national websites to facilitate faster information exchange and networking.

25. According to the survey carried out in 2003 by the UNEP-GEF project in collaboration with the CBD Secretariat, prior to the development of the UNEP/GEF project on the Biosafety Clearing-House, 71.3% of developing countries and countries with economies in transitions indicated the need for assistance, including training in information management and use of the Biosafety Clearing-House. At least 76.1% also reported the need to set up a national biosafety database and to make relevant biosafety information in their national databases available to the international community. 11/

26. A number of countries also emphasized the need for easy and ready access to relevant up-to-date information, scientific data and case studies about LMOs. In particular, countries of the Balkans and the Caucasus which participated in the survey carried out for the FAO in 2003 on the current situation of biotechnology and biosafety issues, expressed a desire to access to the best available scientific information and case studies through peer-reviewed journals, Web-based resources or data clearing-houses. A number of countries also indicated the need for tools to help them collect, organize, store and disseminate information regarding LMOs. During the regional workshops on the Biosafety Clearing-House conducted by the Secretariat (2001-2002), the need for standardized formats and procedures for information exchange and harmonization of mechanisms for reporting information in order to improve data consistency and increase the utility of shared data was emphasized.

G. Identification of living modified organisms

27. More than 80% of the countries that submitted information to the Biosafety Clearing-House expressed a need for capacity-building in identification of LMOs. Some of the specific needs mentioned in this regard include the following: facilities (laboratories and equipment) for testing the presence and concentration of LMOs; capability to use existing methods for detection, identification and quantification of LMOs; systems for LMO identification (including unique identification systems); national systems for documentation of LMO shipments; border control/ LMO inspection systems and facilities; training of inspectors and custom officials in LMOs identification systems; and guidelines for identification, safe handling, packaging and transport of LMOs.

H. Technical, scientific and institutional collaboration

28. The need for technical, scientific and institutional collaboration was identified as a priority by more than 70% of the countries that submitted information to the Biosafety Clearing-House. Specifically, many countries reported a need for mechanisms for regional/international cooperation;

11/ See summary report at: http://www.unep.ch/biosafety/BCH/BCHDocuments/BCH_Questionnaire_Summary.pdf

inter-institutional networks; and a need for building partnerships including public-private sector partnerships. Others expressed a need for mechanisms to facilitate exchange of experts at the national and regional levels, regional networks for information exchange and for scientific cooperation in biosafety research and risk assessment, including joint research activities, scholar exchange, laboratory networking and sharing of research facilities between neighboring countries. Some specifically requested for improved access to information regarding opportunities to participate in international expert consultations and on international task forces on specific issues.

I. Technology transfer

29. Finally, a number of countries highlighted the need for technology transfer, including access to relevant proprietary technologies, support to establish enabling national policies and incentives for the diffusion of relevant technologies, initiatives to foster technology transfer and capability to establish and manage intellectual property rights regimes.

30. The above summary review highlights the challenge facing the implementation of the Biosafety Protocol. Clearly, many developing countries and countries with economies in transition are faced with significant limitations in terms of human resources, institutional and technical capacities. It is apparent that urgent concerted efforts are required to address capacity needs in the above-mentioned areas. The specific needs differ from country to country, which means that it would be necessary to developed targeted interventions in different countries.

III. OVERVIEW OF THE COVERAGE OF EXISTING CAPACITY-BUILDING INITIATIVES IN BIOSAFETY AND THE GAPS IN IMPLEMENTATION OF THE ACTION PLAN

31. Over the last few years, a number of biosafety capacity-building initiatives have been developed and implemented, ranging from short-term activities such as awareness workshops or study tours to long-term measures including conventional training programs. This section provides a general overview of the scope and coverage of the ongoing capacity-building initiatives that are contributing to the implementation of the Action Plan for Building Capacities for the Effective Implementation of the Protocol and highlights some of the major existing gaps. The review is based on the information registered in the Biosafety Clearing-House and the submissions made by governments and relevant organizations to the Secretariat.

32. As of 28 February, the capacity-building projects database in the Biosafety Clearing-House contained 74 ongoing initiatives (including projects, programmes and other initiatives) varying significantly in terms of size, scope of activities and contribution to the different elements of the Action Plan. The database is structured along the lines of the elements of the capacity-building Action and all projects registered in the database indicate which elements they contribute to. Table 2 below summarizes the number and percentage of ongoing projects that are contributing to the different elements of the Action Plan.

Table 2: Number and percentage of ongoing projects contributing to the different elements of the Capacity-Building Action Plan

Capacity-building Elements in the Action Plan	No. of Projects	Percentage
A. Institutional-building (including: regulatory frameworks, administrative systems and infrastructure)	51	69
B. Human resource development and training	65	88

Capacity-building Elements in the Action Plan	No. of Projects	Percentage
C. Risk assessment	31	42
D. Risk management	12	16
E. Awareness, education and public participation	46	62
F. Information exchange, data management and participation in the BCH	47	64
G. Technical, scientific and institutional collaboration	32	43
H. Technology transfer	13	18
I. Identification of LMOs	6	8
J. Socio-economic considerations	3	4
Other	3	4

33. The majority of ongoing initiatives (65) are focused on human resources development and training and several others (51) are helping to build institutional capacities, including development of biosafety regulatory frameworks, administrative systems and institutional infrastructure. Many projects (47) are also contributing to information exchange and data management, including the use of the Biosafety Clearing-House while 46 projects are contributing to promoting public awareness, education and participation. A few projects are helping to build capacity in risk assessment (31) and fostering technical, scientific and institutional collaboration (32).

34. There are relatively fewer ongoing projects addressing the following issues: socio-economic considerations (3 projects), identification of LMOs (6 projects), risk management (12 projects) and technology transfer (13 projects). These areas represent a major gap in the implementation of the Action Plan. According to the country needs' analysis described in section 2 above, these issues were also identified as areas in which many countries are lacking capacity. Therefore, there is an urgent need to explore ways and means of assisting countries to address these critical gaps.

35. In terms of geographical coverage, the distribution of the existing projects is largely uneven. Most of the projects are located in Africa and Asia while the Central and Eastern Europe region has the least number of projects. Table 3 below shows the number of projects being implemented in each region. The second column shows the total number in each region, including those implemented globally or in one or more other regions, while third the column shows the number of projects implemented only in the respective regions.

Table 3: Number of ongoing biosafety projects in each region

Region	Total number of projects	No. projects implemented only in the region
Africa	28	11
Asia/Pacific	25	12
CEE	9	3
GRULAC	19	10
WEOG	8	-
Global/Unspecified	16	-

36. Within each region, some countries have several ongoing projects supported by different donors or organizations, some of which are country-specific, while others have only a few or none that is country-specific.

37. There is also considerable overlap between some of the ongoing initiatives both in terms of the activities undertaken and the countries where the initiatives are implemented. For example, there

are cases where in one country several projects implemented by different organizations are providing assistance for the development or revision of the national biosafety framework. In other cases, training workshops have been organized on the same issues, such as risk assessment, for the same target groups, particularly Biosafety Committee members. Furthermore, some initiatives are disseminating similar training and guidance materials (for example toolkits or manuals/ workbooks on risk assessment) to the same target users.

38. Most of the ongoing initiatives registered in the Biosafety Clearing-House are donor-funded. The Global Environment Facility is currently the single largest source of funding for biosafety capacity-building activities. A number of donor countries, including Belgium, Canada, Germany, Japan, Netherlands, Norway, Switzerland and United States have also provided varying support. Table 4 below provides a summary of the sources and levels of funding for the different ongoing initiatives for which such information is available.

Table 4: Funding levels for different ongoing biosafety capacity-building initiatives 12/

Project or program	**Funding source**	**Executing Agency**	**Funding (US$ M)**
Development of National Biosafety Frameworks	GEF + co-financing	UNEP	43.6
Demonstration projects on Implementation of National Biosafety Frameworks	GEF + co-financing	UNEP, UNDP & World Bank	35.1
Building Capacity for Effective Participation in the Biosafety Clearing-House (BCH) of the Cartagena Protocol	GEF	UNEP	4.61
NEPAD Biosciences Facility for Eastern and Central Africa	CIDA	ILRI and NEPAD	21.0
Program for Biosafety Systems (PBS)	USAID	IFPRI & other institutions	14.8
East African Regional Programme and Research Network for Biotechnology, Biosafety and Biotechnology Policy Development (BIOEARN)	Sida	Uganda National Council of Science and Technology	5.4
Africa-wide Capacity Building Programme in Biosafety	BMZ/ GTZ	African Union	2.65
Capacity Building Project in Biosafety of GM Crops in Asia	Government of Japan	FAO – Regional Office for Asia and the Pacific	1.24
EU Twinning Project PL 01/EN/IB/03 – "Biological Safety System in Poland"	EU PHARE Programme	German Federal Ministry for Health and Social Security	1.70
Rockefeller Foundation Support for Capacity-Building in Agricultural Biotechnology and Biosafety	Rockefeller Foundation	UNU, AGBIOS, CSPI, ACODE, Cornell University	0.97
IOBC GMO Guidelines Project	SDC & BUWAL	International Organisation of Biological Control (IOBC),	0.52
Building Capacity for the Implementation of the National Biotechnology and Biosafety Policy and the Cartagena Protocol on Biosafety in Zambia	NORAD	Norwegian Directorate for Nature Management;	0.48
GenØk's Biosafety Capacity Building Programme	NORAD	Norwegian Institute of Gene Ecology (GenØk)	0.40
BCH Templates for Databases and Websites	US State Dept.	USGS (CBI)	0.15
Project on Biosafety Regulations in Latin America and the Caribbean within the framework of the Biosafety Protocol	OAS	Organization of American States (OAS)	0.08

39. Overall the ongoing initiatives in biosafety have contributed significantly to building basic national capacities to start implementing the Protocol. For example, a number of countries have developed, or are in the process of developing, their national biosafety frameworks and several training workshops have been organized for different players on key issues such as risk assessment,

12/ The amounts of funds listed in the table are based on the information available in the Biosafety Clearing-House.

risk management, public participation and use of the Biosafety Clearing-House. However, a lot still remains to be done. As noted above, there are still significant gaps in the implementation of the Action Plan especially in the areas of socio-economic considerations, identification of LMOs, risk management and technology transfer.

IV. POSSIBLE MEASURES TO ADDRESS THE NEEDS AND GAPS, INCLUDING OPTIONS FOR ENHANCING THE ADEQUACY AND EFFECTIVENESS OF FINANCIAL ASSISTANCE FOR BIOSAFETY CAPACITY-BUILDING

40. Addressing the capacity-building needs and priorities for the effective implementation of the Protocol is a challenging and complex task. A range of strategies and measures would be required in order to respond effectively to the challenge. Based on a review, by the Secretariat, of relevant documents and reports prepared by different international treaties and processes on this subject, this section outlines possible strategies and measures that Governments, relevant organizations and donors could take to address the capacity needs, including ways and means of enhancing the adequacy and effectiveness of financial resources. Some of the treaties reviewed include: the Convention on Biological Diversity, Climate Change Convention, Basel Convention, Ramsar Convention, the Stockholm Convention on Persistent Organic Pollutants and International Plant Protection Convention. 13/

A. Possible Strategies and Measures to Address the Needs and Gaps

41. In an effort to address the capacity needs and gaps in biosafety, a combination of different principles, strategies and measures would need to be considered depending on the situation in each country. Some of the possible measures include the following:

(a) *Development of national strategies for capacity-building in biosafety:* In order to effectively address the needs and gaps identified, countries should consider developing national strategies for capacity-building in biosafety, prioritizing the needs for capacity building activities in the different components of the national biosafety frameworks. Those strategies would provide a means through which different national initiatives could be developed, implemented and monitored so that they address the country needs and priorities in a systematic, incremental and coordinated manner. They would also facilitate a proactive approach to coordinating and matching the support initiatives with the country needs and priorities and help to develop incremental and forward-looking capacity-building initiatives that would be more sustainable. Currently, no country has reported having a national strategy or action plan for capacity-building in biosafety;

(b) *Regional initiatives and approaches*: Regional and subregional cooperation, including south-south cooperation, would be another potential strategy to addressing common needs and gaps where resource limitations would otherwise prevent countries from doing so on their own. By pooling together their unique expertise and resources to implement joint regional initiatives, countries may reap mutual benefits way beyond the individual inputs. Examples of possible regional initiatives include: cooperation in the establishment of centres of excellence, regional information centres, laboratory infrastructure, LMO testing and monitoring facilities, development of model biosafety laws or guidelines, and regional training progammes. Regional approaches could also

13/ Copies of some of the documents from other Conventions reviewed by the Secretariat can be accessed at the following websites: http://www.biodiv.org/financial/default.asp; http://unfccc.int/cooperation_and_support/items/2664.php; http://www.basel.int/resmob/index.html; http://www.ramsar.org/cop7_doc_20.4_e.htm and http://www.pops.int/documents/meetings/inc7/en/meetdocen.htm.

enhance synergies and foster integration of activities and expertise of the different countries. A few regional and sub-regional groups, such as ASEAN, SPREP, African Union, NEPAD, the Organization of American States and the CEE Regional Biosafety Committee have attempted to develop regional initiatives to address common biosafety issues. It is important to identify, build upon and apply the useful experiences and lessons learned from such initiatives to address the capacity-building needs of countries;

(c) *Enhancing human resources development and the role of academic and other training institutions*: In order to enhance human resources development in biosafety, it may be necessary for academic and other training institutions to revise and optimize the scope, content and structure of the curricula and the delivery approaches of their biosafety training programs. New training modules that address specific needs and priorities may also need to be developed. The first Coordination Meeting of institutions offering biosafety-related training and education programs held 4-6 October 2004 in Geneva, Switzerland produced very useful recommendations in this regard (see document UNEP/CBD/BS/COP-MOP/2/INF/9). Examples included: (1) the need to actively involve relevant academics in national and international biosafety processes; (2) the participation of biosafety practitioners from government and other sectors in the training programs of academic and other institutions as resource persons or advisors in design of curricula; (3) the promotion of "training of trainers" programs; (4) support for distance learning and targeted training courses or workshops; and (5) the need for additional financial resources to support training and education programs in biosafety, including scholarships and fellowships/ internships for students from developing countries. It may also be useful to establish national and regional databases for existing expertise to facilitate its mobilization and utilization and to encourage horizontal transfer of skills and experience;

(d) *Enabling countries to conduct their own biosafety research*. This could facilitate countries, for example, to build local capacities to conduct their own risk assessments;

(e) *Establishment or strengthening of biosafety networks*: Regional and international networks could play a big role in assisting countries to address their biosafety capacity needs, for example through mobilization of available scientific and technical expertise, dissemination of relevant scientific and technical information, development of scientific and technical guidelines (for example on risk assessment), training of scientists in specific biosafety areas, and participation in project development and implementation. A few regional networks specifically dealing with biosafety issues have been initiated recently. These include: BIONET-Africa: Network for Capacity Building in Biotechnology and Biosafety for African Universities (hosted by ICIPE); Asian Bio-Net (hosted by the FAO Regional Office for Asia and the Pacific) and Technical Cooperation Network on Plant Biotechnology in Latin America and the Caribbean (hosted by REDBIO and FAO). 14/ Such networks should be expanded and strengthened to play a more catalytic role in supporting biosafety capacity-building activities. Relevant existing networks, such as the Consultative Group on International Agricultural Research (CGIAR) centres, Third World Academy of Sciences (TWAS) and the International Council for Science (ICSU) should also be encouraged to play a central role in biosafety capacity-building;

(f) *Twinning between different developing and developed country institutions dealing with biosafety issues*: In recent years, there has been a growing interest in the concept of organizational "twinning" as a vehicle for sustainable institutional capacity building. 15/ Twinning

14/ See details at the following respective websites: http://www.icipe.org/bionet/intro.htm; http://asiabionet.org/index.htm; and http://www.redbio.org/

15/ See further details in an article available at: http://www.capacity.org/Web_Capacity/Web/UK_Content/Download.nsf/0/C2C542CEE405374CC1256D560029B77B/$FILE/issue-06e.pdf

offers potential advantages over other possibilities for development cooperation. It has the potential to enable the partner organizations to learn from each other and facilitate focused development assistance for building capacity through technical assistance, information sharing, transfer of technology and building of comparable expertise. This strategy was used successfully by the European Commission to provide assistance and advice to pre-accession candidate countries to develop capacities and national biosafety regulatory systems comparable to EU standards; 16/

(g) *Coordinated effort by multiple actors*: Addressing the capacity needs and gaps in biosafety will definitely require concerted efforts by multiple actors, including governments, civil society, the private sector and the international community, and effective coordination among them. Many more complementary capacity-building initiatives – projects, programmes and targeted activities – are required. It is obvious that no single initiative or approach can address all of the needs. Therefore, it would be useful for the recipient governments and the providers of support to work together in a coordinated manner and preferably within a strategic framework to address the different needs. It would also be prudent to facilitate link ups between countries that have identified their specific priority needs and organizations that are offering different types of support;

(h) *Short- and long-term interventions*: Governments and providers of support may wish to consider a dual strategy that includes implementation of both long-term programmatic initiatives as well as targeted short-term one-off interventions with immediate outputs that respond to specific needs. A dual strategy approach also takes into account the fact that key deliverables carried out in the early stage may change present directions for longer-term strategy;

(i) *Building on previous efforts*: Before beginning to build capacity within programmes, practitioners need to identify and mobilize pre-existing expertise and institutional capacities – skills, structures, partnerships and resources – and build on them rather than recreating them. For example, relevant officials have so far received training in different areas, it would be irrational to organize new training workshops on the same issues and probably for the same people;

(j) *Increasing and optimizing financial resources*: Almost all the efforts to address the needs and gaps hinge upon availability of adequate financial resources. Indeed the majority of countries that submitted information to the Biosafety Clearing-House identified funding as the foremost specific need. The current levels of funding for biosafety activities, both from the national budgets and donor assistance, are very low and inadequate. There is a need to increase the amount of funding for biosafety activities if developing country Parties and Parties with economies in transition are to meet their obligations under the Protocol. At the same time, there is a need to ensure effective allocation and efficient use of the scarce available resources, both from the perspective of the donor and that of recipient organizations/countries. The next sub-sections discuss possible measures for responding to this need.

B. Possible measures for enhancing adequacy and effectiveness of financial assistance to developing countries and countries with economies in transition

42. The Action Plan for Building Capacities for the Effective Implementation of the Cartagena Protocol on Biosafety, section 3 paragraph 4 (e), calls for enhancing the effectiveness and adequacy of financial resources provided by multilateral, bilateral and other donors to developing countries as well as countries with economies in transition for implementation of the Protocol.

16/ An example of a twinning initiative can be found at: http://www.twinning-biosafety.de/en/project/project.html

43. In order to assist developing countries and countries with economies in transition to effectively meet their identified needs, priorities and gaps, it would be necessary to consider the following three aspects related to the financing of the initiatives to address them:

(a) Improving accessibility to available resources and external assistance;

(b) Mobilizing new and additional financial resources for biosafety activities; and

(c) Enhancing efficiency in the allocation and utilization of the available limited resources and maximizing their effectiveness and impact.

(a) Measures to improve accessibility to available resources and assistance by recipient countries

44. Improving accessibility to available resources and external assistance is another important measure that should be pursued in the effort to address the needs and gaps in capacity-building for biosafety. One of the reasons why some countries have several ongoing biosafety projects supported by different donors or organizations while others have very few or none is because of lack of access to information on available funding opportunities or simply lack of ability to write good fundable project proposals and to work through the application procedures which are often quite complex. In this regard, the following measures may be considered:

(a) *Dissemination of information about available funding assistance:* Information about available funding assistance for biosafety activities should be made more widely and readily accessible to all eligible countries. One option is for donor countries and organizations to use the "capacity-building opportunities" database in the Biosafety Clearing-House to announce available funding for biosafety and potential recipient countries could check the database more regularly. The Secretariat would also disseminate all newly registered information to all national focal points using the Current Awareness Service.

(b) *Promoting awareness about the policies and procedures of funding agencies:* Lack of awareness of the requirements and application procedures of funding agencies could also be one of the reasons why some countries do not apply for funding assistance. There is a need to sensitize countries about the prevailing development assistance policies and procedures for accessing the funding for the different funding agencies. There is also a need for preparing and disseminating guidance materials regarding the policies and procedures for accessing their funding assistance. These materials could be made available to countries through the Secretariat and other mechanisms.

(c) *Training in project proposal writing:* Another possible reason why there are few ongoing biosafety projects in some countries could be because the relevant officials lack skills, know-how and experience in initiating and preparing successful project proposals and in dealing with funding agencies. To address this limitation, international organizations involved in facilitating capacity-building in biosafety should consider organizing training workshops on project proposal development to provide key government and non-government players with basic skills. These may include: skills in project identification, problem analysis, formulation of objectives and outcomes and the specific activities to achieve them, preparation of activity plans, development of indicators and logical framework matrices, budgeting, project organization and the basic steps in following-up the proposals with the funding agencies.

(b) Mobilizing additional financial resources for capacity-building in biosafety

45. Most of the ongoing in biosafety capacity-building activities in developing countries and countries with economies in transition are funded from external sources, with little contribution from the national budgets. The Global Environment Facility is currently the single largest source of

funding for biosafety capacity-building activities. The overall portfolio of the ongoing biosafety capacity-building projects stands at about US$ 120 million. In view of the substantial amount of financial resources that will be required for capacity building in biosafety, the Global Environment Facility, in its information document (UNEP/CBD/BS/COP-MOP/1/INF/19) submitted to the first meeting of the Conference of the Parties serving as the meeting of the Parties to the Protocol, underscored the need to consider further ways and means of financing the implementation of the Protocol beyond the support from the financial mechanism for the Protocol, i.e. the Global Environment Facility. 17/ Possible options for broadening sources for financing the implementation of the Protocol in general and capacity-building activities in particular, could include the following:

(a) *Engagement of all relevant funding agencies*: One option for mobilizing additional resources for the implementation of the Protocol would be to engage and encourage all relevant funding agencies – multilateral institutions, bilateral development assistance agencies, regional banks and other financial institutions – to assist Parties to implement the Protocol. Currently, the significance of biosafety in the effort to promote sustainable development is not yet well articulated and as such, some development assistance agencies, especially those focused on poverty eradication have not yet considered it as a high priority in their assistance policies and programmes. In this regard, there is a need to raise awareness of such agencies about the importance of biosafety vis-à-vis other environment and development objectives and to encourage them to mainstream it in their assistance strategies. Likewise, it is important to ensure that the deliberations and decisions of the Conference of the Parties serving as the meeting of the Parties to the Protocol are communicated to relevant funding agencies so that they may be reflected, for example, in multi-donor discussions. On the other hand, the recipient countries themselves need to signal clearly what their specific priorities in biosafety are and include them as priorities for assistance in their national development plans or policy frameworks.

(b) *Consideration of new and innovative sources of funding for biosafety*: Another possible option is to explore new and innovative sources of funding for biosafety activities and to develop national capabilities to mobilize resources from such sources. New innovative means of mobilizing resources for financing public services have been tested and used in different sectors, such as forestry, wildlife and water sectors, to cover operating and maintenance costs associated with the provision of relevant services. Examples that could be used, as appropriate, to finance biosafety activities include: service fees, self-financing schemes, trust funds and joint public-private sector ventures. For example, service charges/ fees could be levied from applicants seeking to import or release LMOs to cover the administrative costs for handling notifications or applications for permits import or export of LMOs. In this regard, there may be a need to assist countries to develop skills on how to mobilize resources from such sources. It may also be necessary to assist them to establish legal provisions and administrative systems to manage such financing mechanisms, for example the service-charge systems, trust funds or joint ventures.

(c) Measures for enhancing the effectiveness of financial resources and assistance

46. Efforts to enhance the mobilization of additional resources to support biosafety activities need to be complemented by measures to enhance efficiency in the allocation and utilization of the available limited resources and to maximize their effectiveness and impact. It the current era of increasingly scarce resources, there is a need to make the most efficient and effective use of the available resources. There are a few different possible strategies and measures that could be considered by recipient countries, donor agencies and technical assistance organizations in this regard. Examples could include the following:

17/ See: http://www.biodiv.org/doc/meetings/bs/mop-01/information/mop-01-inf-19-en.doc

(a) *Training in effective resource allocation and use*: One of the constraints facing some of the national institutions responsible for biosafety management is the lack of expertise in rational allocation and efficient utilization of the limited available resources to address strategic or most critical biosafety needs and gaps. It may be necessary to organize training workshops for relevant professional staff and directors of those institutions in basic skills, including: effective budgeting and how to match costs with available resources, cash flow management, methodologies for minimizing costs, cost-recovery strategies and other related skills;

(b) *Developing integrated national capacity-building programmes*: When developing biosafety capacity-building projects, relevant national institutions should consider other national capacity-building initiatives being undertaken for implementing other relevant international treaties or national programmes in order to maximize the synergies and mutual benefits. This would require mapping out strategic generic capacities, for example basic institutional infrastructures, such as internet connectivity or skills in institutional management, stakeholder involvement or information management, required across the different national institutions, developing integrated national capacity-building programs and pooling resources to implement them;

(c) *Coordination between donor agencies and technical assistance organizations:* Over the last few years, a number of bilateral or multilateral biosafety assistance programmes have been implemented to assist developing countries and countries with economies in transition. However, some of the programmes have been designed in isolation of each other resulting in overlapping activities and duplication of effort and resources that could otherwise be more effectively invested elsewhere. Concerted action is needed to improve information sharing and coordination among and within the different donor agencies and organizations providing technical assistance in the same countries, in order to streamline and synchronize their support with a view to increasing transparency and minimizing duplication and ineffective use of resources. One possible mechanism for facilitating this would be to organize periodic donor consultative/coordination meetings to exchange information regarding the nature and scope of the assistance being provided to different countries;

(d) *Improving the design and delivery of biosafety assistance programmes*: There is a need for improvement in the design and delivery of assistance programmes in particular to encourage demand-driven, results-oriented and participatory approaches. It is important that assistance programmes are responsive to the specific needs of countries and aim at achieving targeted results, with clear milestones based on well-costed actions. This would facilitate monitoring the effectiveness of assistance provided in addressing specific priority needs and determining whether the assistance programmes are having real impact. In this regard, it would be imperative for funding agencies and technical assistance organizations to critically appraise the specific needs of potential recipients on a country-by-country basis before creating new capacity-building projects. The information available in the country needs database in the Biosafety Clearing-House as well as needs assessment reports undertaken for example during the development of national biosafety frameworks would provide a good starting point;

(e) *Regular-review of assistance programmes and sharing of emerging lessons*: Recipient governments, donor agencies and technical assistance organizations should periodically review their biosafety assistance programmes to determine and share with others any lessons learned that could help to enhance the effectiveness and impact of their programmes. Such information could be submitted to the Secretariat for sharing through the Biosafety Clearing-House.

V. CONCLUSION AND RECOMMENDATIONS

47. Developing countries and countries with economies in transition vary widely in their levels of capacity to implement the Protocol and have different needs and priorities. This note has attempted to provide a broad picture of the current capacity-building needs and gaps in the implementation of the Protocol. Clearly, countries are constrained by a number of common limitations including: lack of financial resources, shortage of qualified personnel, and inadequate legal and institutional frameworks, poor infrastructure and limited access to relevant information. On the basis of the information provided by countries to the Biosafety Clearing-House, the following areas that were highlighted in the Action Plan seem to have the least coverage by the existing capacity-building initiatives identification of LMOs, risk management, technology transfer and socio-economic considerations.

48. One of the major challenges is to identify and implement appropriate measures and approaches to address the identified needs and gaps. This note has provided a few examples of possible strategies and measures that Governments, relevant organizations and donors may wish to consider in responding to this challenge. Almost all those efforts hinge upon availability of adequate and sustainable financial resources. Indeed, most countries identified lack of funding as the foremost need. The note has identified a range of possible strategies and measures that could be considered to enhance the adequacy and effectiveness of financial resources.

49. As countries seek to develop more effective measures and approaches to building capacities for the implementation of the Protocol, it is important to ensure that capacity-building efforts are clearly linked to the specific needs and priorities of the countries in order to achieve maximum impact. Moreover, capacity-building will require efforts from multiple actors and effective coordination among them.

50. The information available regarding the needs and priorities for capacity-building in biosafety is still limited. As stated in this note, so far only 50 countries have submitted information to the Biosafety Clearing-House and some of the information provided is imprecise about the specific needs and their order of priority. There is a need to assist countries to undertake more systematic and in-depth country-driven assessments and to prepare inventories of existing capacities and ongoing initiatives to facilitate their mobilization and deployment to address the biosafety needs. The national capacity self-assessments initiative, which is implemented through UNDP-GEF Capacity Development Initiative, could be one possible mechanism for doing so.

51. This note has discussed a range of possible strategies and measures that could be taken to enhance the adequacy and effectiveness of financial resources to assist developing countries and countries with economies in transition to address their capacity-building needs and priorities for the effective implementation of the Biosafety Protocol. It is clear from the discussion, that no single strategy, measure or approach is sufficient in responding to the challenge. A combination of different principles, strategies and measures would need to be considered, as appropriate, depending on the situation in each country.

Annex

COMPILATION OF THE SPECIFIC CAPACITY-BUILDING NEEDS EXPRESSED BY COUNTRIES

General Category of Needs	Specific Capacity-Building Needs
1. Institutional Building	
a) Regulatory Framework	• Assistance in development of biosafety laws and the corresponding implementing regulations, guidelines or orders • Competence in policy making and decision making related to biosafety • Model legal and administrative regimes • Development of competency in regulatory issues • Training of relevant officials and the public on national biosafety regulatory regimes • Training guides on the national biosafety regulatory regimes • Skills in drafting of biosafety laws and guidelines • Policy guidelines for GMO research and field testing • Training in regulatory implementation, e.g. decision making principles and procedures • Training in policy analysis to inform regulatory development
b) Administrative Framework	• Technical and administrative mechanism to handle applications of LMOs • Guidance material on handling applications for import or release of LMOs • Development of administrative procedures and statutory application forms for import of LMOs, deliberate release of LMOs and contained use of LMOs • Administrative practices, including handling of applications for LMO import or release, preparation of LMO applications and dossiers (for potential applicants) and decision-making • Development of safety requirements and procedures for LMO confined field trials and contained use • Guidelines for laboratory-based experiments, testing green house and field trials
c) Infrastructure	• Facilities and equipment for LMO monitoring activities, including: laboratory and greenhouse containment facilities • Certified laboratories for LMO detection • Institutional analyses of existing infrastructure and technical capacities • Infrastructure for conducting biosafety research, e.g. to determine the effects of LMOs on non-target species and the aggressiveness studies for LMOs compared to their non-LMO counterparts • Improved telecommunications and access to information communication technologies • Reliable Internet connectivity with the corresponding security mechanisms against viruses, hackers, etc • Infrastructure and office facilities to facilitate electronic networking, institutional inter-linkages and sharing of information between national administrative bodies and between countries

	• Upgrade of existing information infrastructure and capability • Identification and strengthening centres of excellence
d) Funding	• Need for increased external project funding for biosafety • Funding to conduct food safety analyses • Financial assistance for biotechnology/ biosafety research • Funding for biosafety training courses • Sustainable financing mechanisms
e) Mechanisms for follow-up	• Mechanism for monitoring of enforcement of the biosafety regulatory regimes • Competence in undertaking inspection and enforcement to ensure compliance with the biosafety regulatory regimes • Procedures and practices for enforcement of biosafety laws • Post-market monitoring of LMOs, • Development of national requirements and guidelines for handling, transport, packaging and identification of LMOs • Enforcement actions required for handling, transport, use, transit and release of LMOs • Training and guidance materials for monitoring and enforcement of the biosafety regulatory regimes • Competence to monitor, enforce and report on compliance
2. Human resources development and training	• Training of decision makers, scientists, administrative and technical staff on legal, scientific and technical matters • Scientific and technical expertise in fields relevant to risk assessment and risk management (e.g. molecular biology, population genetics, ecology, taxonomy, microbiology, virology, botany, zoology, biochemistry and entomology) • Social science expertise including management skills, law, economics and political science • Regulatory expertise including drafting of laws, law enforcement • Training guides and manuals • Training in information management • Overseas post-graduate training in biotechnology and biosafety • Training of quarantine staff in handling the LMO imports
3. Risk assessment	• Competence in undertaking risk assessment and risk management • Standard methods, techniques, standards and guidelines for risk assessment • Training and guidance material in risk assessment and risk management • Standardization of procedures and methodologies for risk assessment and risk management • Technical guidelines for risk assessment and risk management • Model test systems and experiment protocols for risk assessment • Technical parameters and methods to describe and measure the risk of LMOs • Establishment of risk assessment institutions • Access to available scientific data and information on risk assessment of LMOs • Basic research on risk assessment and risk management • Models for prediction and control of potential adverse effects of LMOs

4. Risk management	• Scientific expertise for risk assessment • Technical means for monitoring LMOs in the field • Methodologies and procedures for post-release monitoring of environmental effects of LMOs • Examples of strategies for risk management • Protocols to address issues of gene flow • Analytical methods for tracing the transgenic traits in the field • Scientific capacity to examine the rationality of the transgenic constructs and the stability of the LMOs in field conditions • Post release monitoring systems • Application of risk monitoring principles • Strategies for prevention, control, handling of LMO effects • Emergency strategies and technical countermeasures for the control of the potential effects of LMOs • LMO monitoring protocols
5. Awareness, education and participation	• Structured public awareness and education programs on biosafety • Ways to effectively communicate to the public about the national biosafety regulatory system and how it works • National systems for participation in decision-making on LMOs • Mechanisms for easy public access to information on biosafety • Education and awareness materials on biosafety • National biosafety websites to communicate information • Training guide on public information and participation • Methodologies for public awareness and participation • Means of stakeholder and public consultation, including the private sector • Media training to promote public information on biosafety; skills in engaging the media • Methodologies for effective outreach regarding biosafety • Networks for public awareness through media, seminars, etc
6. Information exchange & data management, including participation in the BCH	• Channels for communication and information dissemination • Establishment or strengthening existing biosafety information exchange mechanisms • Creation and maintenance of national databases and information registries • Standards for producing and validating data related to LMOs to be entered in the BCH • Information technologies and training in their use • Mechanisms for data collection, analysis, storage and management • Information sharing mechanisms • Support for development of national nodes of the BCH where country information can be accessed • Support for translation of data and reports for submission to the BCH • Access to available scientific information and case studies, through journals and Web-based resources

7. Scientific, Technical and institutional collaboration	• Mechanisms for international cooperation and communication in biosafety • Mechanisms for exchange of experts at the national and regional levels • Opportunities for laboratory networking including the possibility of sharing facilities between neighboring countries • Regional networks for information exchange • Regional harmonization of legal, regulatory and administrative systems • Regional cooperation in risk assessment and harmonization of legal, regulatory and administrative systems and approaches • Scientific cooperation in the field biosafety (joint research, establishment of joint biosafety laboratory and scholar exchange) • Cooperating with other countries to strengthen and streamline regulatory frameworks, participate in international expert consultations and serve on international task forces
8. Technology transfer	• Enabling policies and incentives for technology transfer • Management of intellectual property rights • Technologies for risk assessment and monitoring of LMOs • Capability to handle the biosafety in terms of technology transfer and to absorb the technologies
9. Identification of LMOs	• Methods and systems for identification, detection and traceability of LMOs • LMO testing laboratories and equipment • Border control and LMO inspection facilities • Training of inspectors and customs officials in LMO identification systems • Ability to use analytical methods to detect and quantitatively assess the transgenic traits (e.g. PCR, ELISA and other methods) • Testing or validation system to identify the presence or concentration of LMOs • Development of unique identification systems • Policy and guidelines on labeling of GM plant products • Documentation systems for LMO shipments • National systems for inspection of LMO shipments
10. Socio-economic considerations	• Skills and methods for risk-benefit analysis of LMOs • Skills for integration of socio-economic considerations in decision-making regarding LMOs

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